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ABSTRACT

This manual can be used independently by students in secondary health occupations programs or in agricultural education programs, or by persons receiving on-the-job training in a veterinary clinic. This manual includes an instructor's key that provides answers to the activity sheets and unit evaluations. The manual consists of the following seven units: (1) introduction to the field of veterinary medicine; (2) communication skills; (3) basic office procedures; (4) animal identification; (5) safety; (6) animal care; and (7) clinic procedures. Units are further divided into lessons, which contain lesson objectives, key terms, content information, illustrations, and activity sheets as appropriate for the content. Activity sheets are designed to assist the learner in mastering the information in each lesson. Each unit has a written evaluation, skill sheets that provide a record of mastery of the steps of procedures for each skill, a unit checklist for keeping track of activity sheets, skill sheets, and written unit evaluations. In addition, the manual contains a bibliography listing 23 references and a glossary of 251 terms. (KC)

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ED 419 922

Animal Care Assistant
Instructor Key
Student Manual

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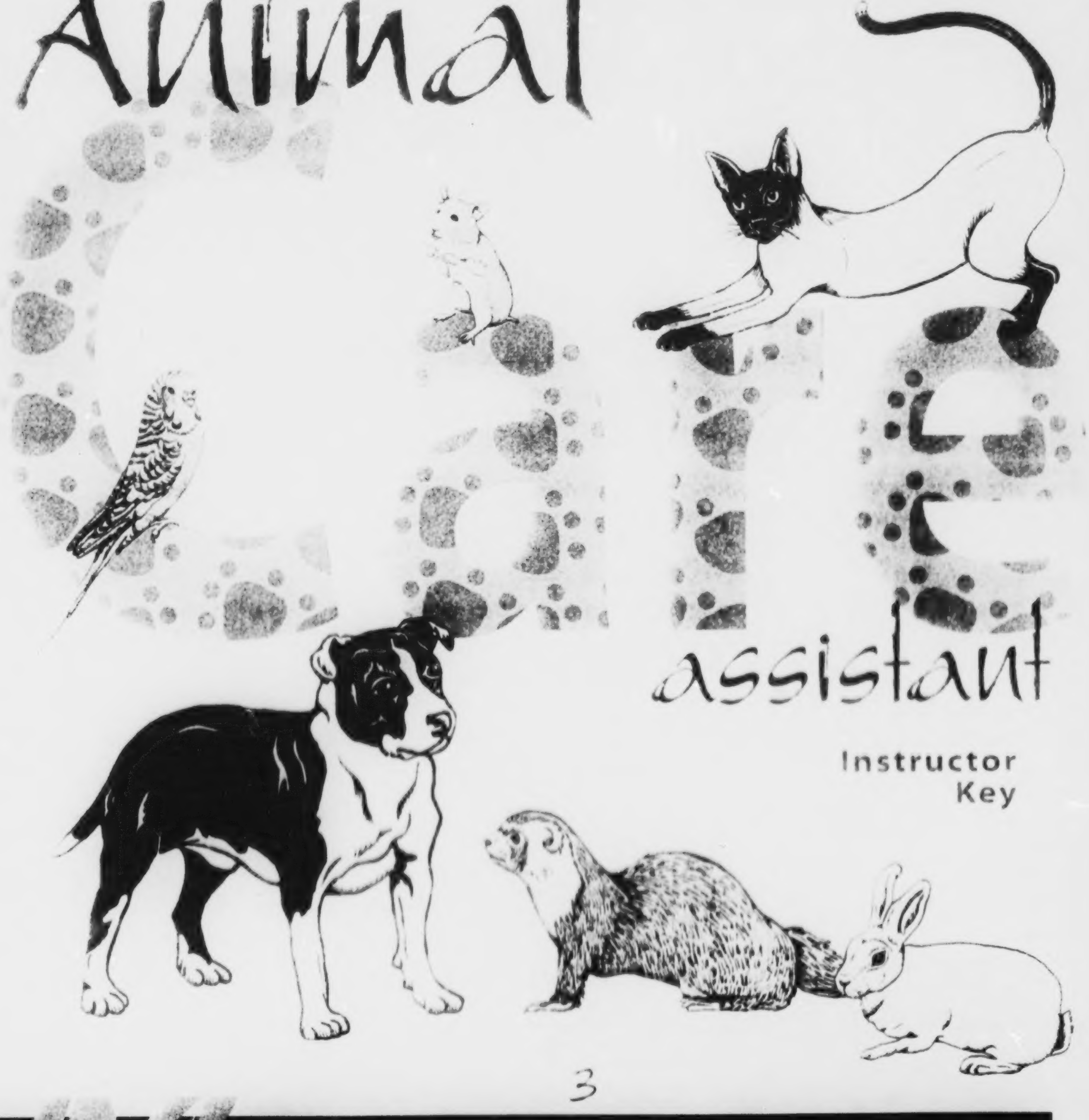

Instructor Key

Instructional Materials Laboratory
University of Missouri-Columbia
Missouri Department of Elementary and Secondary Education

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Animal Care Assistant

Instructor Key

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Instructional Strategies

This *Animal Care Assistant* Instructor's Key is designed to be used with the *Animal Care Assistant* Student Manual. It provides answers to the activity sheets and unit evaluations. The content was developed with input from secondary health occupations education and agriculture education instructors, veterinary technician instructors, veterinary technicians, veterinarians, and personnel from the Missouri Department of Elementary and Secondary Education and the Instructional Materials Laboratory at the University of Missouri-Columbia.

The self-instructional format provides health occupations education instructors the opportunity to address the needs of students whose health career interest is outside the nursing field. Following completion of the Health Care Assistant Core Competencies, a student interested in pursuing a career in the veterinary field can achieve veterinary specific competencies through this curriculum. Successful completion prepares the student for an entry-level position as an animal care assistant as well as a solid knowledge and skill base to continue education in a veterinary medical career.

The *Animal Care Assistant* curriculum is primarily designed to be used independently by students who are in secondary health occupations programs or by individuals receiving on-the-job training in a veterinary clinic. Instructors should set up parameters for the individualized instruction, oversee the knowledge component of instruction (including the Written Unit Evaluations), and identify a clinical site and a clinical supervisor. The clinical supervisor should be responsible for supervising the student while at the clinical site, providing skill training, and evaluating mastery of skills.

Since mastery of the information and skills will be evaluated using the Written Unit Evaluations (pink) and the Skill Sheets (pink), it is recommended that these pages be removed before the manual is given to the student. These pages are located together at the end of the manual.

An Animal Care Assistant Competency Record Sheet and an Animal Care Assistant Certificate of Achievement have also been included at the end of this manual. These could be removed and filed with the evaluation instruments.

The student manual is divided into seven units: Introduction to Veterinary Medicine, Communication Skills, Basic Office Procedures, Animal Identification, Clinic Safety, Animal Care, and Clinic Procedures. Units are further divided into lessons, which contain lesson objectives, key terms, content information, illustrations, and activity sheets as appropriate for the content. Activity Sheets are designed to assist the learner in mastering the information in each lesson. They also contain clinical/laboratory activities. Instructors should review or discuss these activities with students. The Activity Sheets may or may not be graded depending on individual student needs and instructor's preference.

Each unit has a written evaluation, which should be administered after all lessons in the unit are studied. A score of 80 percent is needed for mastery of information in the unit. Skill Sheets provide a record for mastery of the steps of procedure for each skill. The student should practice the skills outlined in the lessons before requesting evaluation of the skills. When evaluating mastery of the skills, the clinical supervisor can determine that mastery is obtained when he or she feels confident in the student's ability to perform the skill without direct supervision.

A Unit Checklist, located at the end of each unit, provides a method for keeping track of Activity Sheets, Skill Sheets, and Written Unit Evaluations to be completed in the unit.

In addition to being utilized in the secondary health occupations program to prepare animal care assistants, the *Animal Care Assistant* curriculum could be used in other ways as well:

> *Health occupations education instructors may choose some units of instruction as an adjunct to teaching career opportunities in veterinary medicine or animal science.
>
> *Veterinary clinics and clinical training sites may use all or part of the curriculum in training students or new staff members.
>
> *Agricultural education instructors can use the materials for students enrolling in courses that prepare students for entry-level work in the veterinary field or prepare students for further study in veterinary medicine.

Answers to Activity Sheets and Written Evaluations

Note: Answers are not provided for Clinical/Laboratory Activities. Review or discuss these activities with students.

Unit I: Introduction to Veterinary Medicine

Lesson 1: The Animal Care Assistant - Activity Sheet

1. The purpose of veterinary medicine is to diagnose and prevent disease and injury in animals. Veterinary medicine includes prescribing and administering drugs, biologic agents (vaccines), anesthetic agents, and medical and surgical techniques.

2. a. The veterinarian is responsible for diagnosing disease, prescribing medication, and performing surgery on patients.

   b. Veterinary technicians assist in the practice of veterinary medicine under the direction and supervision of the veterinarian and may supervise animal care assistants and other members of the veterinary team.

   c. Animal care assistants, kennel workers, or caretakers perform basic tasks including feeding, watering, bathing, restraining, moving and exercising animals, cleaning, clerical or office duties, and other similar entry-level activities.

   d. The office manager manages the business affairs of the veterinary practice including hiring and firing, employee evaluations, payroll, ordering supplies, paying the practice's bills, handling advertising, client account management, and complaints.

   e. The receptionist schedules appointments, greets clients and their animals, and is responsible for answering the telephone.

3. Veterinarians attend college for an average of six to eight years. A veterinarian receives a graduate degree (D.V.M.) after completing four years of veterinary school. They must also pass both state and national board exams in order to obtain state licensure.

   Veterinary Technicians graduate from a two- to three-year program in veterinary technology accredited by the American Veterinary Medical Association (AVMA). Registered, certified, or licensed technicians must take national and state board exams.

Animal Care Assistants may have attended a vocational program or received on-the-job training.

4. Answer should include four of the following:
   a. Private practice (small animal, large animal, mixed, and specialty)
   b. Research laboratories
   c. State or federal government
   d. Educational institutions
   e. Humane organizations

5. The answer should include three of the following:
   a. Small animal practice
   b. Large animal practice
   c. Mixed or both small and large animal practice
   d. Specialty practice

6. Answer should include four of the following:
   a. Ethica
   b. Dependable
   c. Reliable
   d. Trustworthy
   e. Responsible
   f. Empathetic
   g. Enthusiastic
   h. Motivated
   i. Tactful
   j. Tidy
   k. Efficient
   l. Able to handle unpleasant tasks

7. a. Be courteous.
   b. Have a caring attitude.
   c. Present yourself professionally.

8. Answer should include four of the following:
   a. Wearing clean clothes
   b. Using good personal grooming habits
   c. Limiting makeup and jewelry
   d. Trimming fingernails
   e. Wearing required uniforms
   f. Wearing appropriate footwear

9. a. Prevent disease transmission
   b. Prevent injury

10

Lesson 2: Ethics and Public Relations - Activity Sheet

1. Ethics are morally correct thoughts, judgments, and actions.

2. Answer should include four of the following:
   a. Speak and act with honesty and fairness.
   b. Consider the patient's welfare first.
   c. Respect the rights of clients, colleagues, and other health professionals.
   d. Seek the respect of colleagues, clients, and the public.
   e. Choose whom you serve and never neglect the patient.
   f. Never advertise false, misleading, or deceptive information.
   g. Safeguard the public from unethical veterinarians.
   h. Never render services under conditions that compromise free exercise of judgment or skill.
   i. Participate in community activities and organizations.
   j. Strive to improve knowledge and skills.

3. Answer should include three of the following:
   a. Placing personal gain (monetary, privileges, etc.) over the welfare of the patient.
   b. Degrading other veterinarians' work or treatment plans.
   c. Promising "miraculous" results or cures.
   d. Not using updates in veterinary medicine.
   e. Operating to conceal genetic defects.
   f. Discussing patients and clients outside the workplace.
   g. Bringing harm to others.
   h. Causing illegal actions.

4. Answer should include three of the following:
   a. Not renewing the required license or certification.
   b. Using or being addicted to drugs.
   c. Breaking any laws.
   d. Causing injury to a patient or client because of negligence.
   e. Not complying with the legal limitations of your profession.

5. Illegal action

6. Answer should include two of the following:
   a. Inform the client of the risks of a procedure or treatment.
   b. Secure the owner's written consent before doing surgery, making marked changes in treatment, or performing euthanasia.
   c. Maintain complete and accurate records of animals in your care or custody.
   d. Postpone treatment until the proper equipment is available.
   e. Label all dispensed products.

  - f. Show concern for owner and patient.
  - g. Be familiar with laws regarding disposal of abandoned animals.

7. Answer should include two of the following:
   - a. Make a statement the client can interpret as a guarantee of good results.
   - b. Have the owner help with treatments requiring extreme measures.
   - c. Perform a treatment or procedure without proper training or qualifications.
   - d. Make an intentionally misleading or false statement in a medical record.

8. Veterinary staff must hold all information about clients and their animals in the strictest confidence.

Lesson 3: Regulations - Activity Sheet

1. Answer may include two of the following or may be more specific to the community:
   - a. Public nuisance and leash laws
   - b. Prohibition of some animals in residential areas
   - c. Humane treatment regulations
   - d. Sanitation regulations
   - e. Animal licensure regulations
   - f. Required vaccinations

2. Board of Veterinary Medical Examiners

3. Answer should include two of the following:
   - a. Board of Veterinary Medical Examiners
   - b. Missouri Department of Natural Resources (MDNR)
   - c. Missouri Department of Health (MDOH)

4. The purpose of the 1970 Occupational Safety and Health Act is to assure safe and healthy working conditions for every employee in the United States.

5. The DEA is responsible for regulating access of controlled substances through legal channels of distribution. The purpose of the DEA is to effectively control narcotic and dangerous drug abuse through enforcement and prevention.

6. Material Safety Data Sheets are sheets of information about a particular hazardous chemical or material found in a product. Information includes dangers to an employee's health and treatments for accidental exposure.

7. Answer should include three of the following:
   - a. Regulate animals transported in commerce, used for nonagricultural research and exhibition, and sold as pets at the wholesale level.

b. Set the standards that govern the humane handling, housing, care, treatment, and transportation of certain warm-blooded animals, including dogs, cats, monkeys, guinea pigs, hamsters, rabbits, and other warm-blooded animals in zoos, circuses, marine animal shows, and exhibits.

c. License and register individuals and businesses with APHIS.

d. Require individuals and businesses to provide animals in their care with adequate food, water, housing, sanitation, ventilation, and veterinary care.

e. Regulate the handling and transportation of animals.

8. Required health papers that must accompany livestock crossing state borders. The papers are signed by a veterinarian to ensure that required tests and physical examinations required by the state of destination have been done to the animals.

9. a. American Association for the Accreditation of Laboratory Animal Care (AAALAC)
   b. American Association for Laboratory Animal Science (AALAS)

10. The federal government

11. Missouri Department of Conservation

Unit I: Introduction to Veterinary Medicine - Written Evaluation

1. a
2. b
3. c
4. a
5. a
6. c
7. b
8. c
9. d
10. a
11. e
12. b
13. b
14. a
15. b
16. c
17. a
18. c
19. e
20. f
21. d
22. c
23. b
24. a

Unit II: Communication Skills

Lesson 1: Effective Communication - Activity Sheet

1. The answer should include three of the following:
    a. Choose words efficiently.
    b. Use proper language.
    c. Avoid slang.
    d. Turn body toward and make eye contact with the person speaking.
    e. Smile, at appropriate times.
    f. Speak distinctly and clearly with a pleasant tone of voice .
    g. Listen carefully to the person speaking.
    h. Do not slouch, yawn, or act distracted.
    i. Follow through and obtain feedback from the person asking a question.

2. The answer should include three of the following:
    a. Slouching
    b. Yawning
    c. Acting distracted
    d. Not making eye contact
    e. Facing body away from the person

3. "Hello, Ms. Browning. How can we help you today?"

4. Using poor grammar implies a lack of knowledge and gives the client an undesirable impression of the clinic and of you.

5. a. Improper grammar and English because it gives the client a poor impression.
    b. Profanity because it could upset the client and is unprofessional.

6. Always treat others the way you would want others to treat you.

7. Animal care assistants must limit their responses to general information that they have been authorized to discuss such as office hours and general recommendations regarding preventative health care.

8. Always politely defer any questions regarding procedures, treatments, or the status of a patient to the veterinarian or veterinary technician.

9. The answer should include two of the following:
    a. People treat pets as their children or family members.
    b. Companion animals are used for therapy to help people cope with physical or emotional problems.

c. Pet therapy is being incorporated into many nursing homes and hospital programs.
d. Support dogs or seeing-eye dogs are valuable companions for people who have disabilities.
e. The relationship that exists between service dogs and police or military handlers whose lives depend on each other.

10. Regardless of the clients' positions, staff must offer all clients their best service and respect their decisions regarding care.

11. a. Numbness and Denial - Most people feel shock and a sense of disbelief when a pet dies, whether the death was anticipated or sudden. These feelings are defenses against feeling the full impact of the loss.

    b. Painful Feelings - After the initial shock and denial, the owner may feel anger. The owner may direct his or her anger at the animal for dying or at the veterinary staff for not saving the pet's life. Grieving owners may turn their anger into guilt and blame themselves for their losses.

    c. Acceptance - After some time passes, pet owners will work through their painful feelings and stop feeling such intense anger, pain, and guilt.

12. Empathy is intimate understanding of another person's feelings, thoughts, and motives by putting oneself into the other person's position.

Lesson 2: Telephone Communication - Activity Sheet

1. a. Greet the caller.
   b. Identify the veterinary practice.
   c. Identify yourself.
   d. Offer assistance.

2. Find out the reason for the call. Ask the client, "Can you hold for a moment, please?" Try and let the caller know how long he or she must wait. Allow the client to respond to your request before punching the hold button. Make every effort to keep the caller's wait brief. When you return to a caller on hold, always thank the person for waiting.

3. a. The name of the person with whom the caller wanted to speak.
   b. The current date.
   c. The time of day the call was received.
   d. The name of the caller and pet's name correctly spelled.
   e. Whether the caller is an existing client or a referral from an existing client.
   f. The reason for the call (client's concern, business meeting, personal call, etc.)

g. Any message the caller wants to leave and any sense of urgency expressed.
h. Indication of whether the caller expects a return call or will call back later.
i. For calls that need to be returned, include the number and best time to reach the caller.

4. An urgent situation demands immediate attention; it may or may not be life-threatening, but should be considered as such until more information can be obtained from an examination.

5. An emergency situation is a serious event that develops suddenly and unexpectedly and demands immediate action; an emergency is a potentially life-threatening situation.

6. Answer should include four of the following:

Antifreeze ingestion
Asthma attack
Airway obstruction
Animal aggression or attack
Anxiety attack
Animal bite
Accident
Breathing problem
Bleeding
Bloated
Blindness, sudden
Broken bone
Choking
Collapse
Chocolate ingestion
Convulsion
Cyanosis (blue gums)
Coma
Constipated cat
Dead
Diabetic complication
Diarrhea
Disoriented/dizzy
Eye injury
Electrical cord/electrocution
Facial swelling
Fainting
Fracture
Frostbite
Gagging
Hives
Hit by car
Heart condition complications
Hyperactive
Injury
Intense itching
Labor (giving birth)
Newborn animals
Orphaned animals
Open wounds
Overheating
Overdose
Pain
Poison
Pale gums
Paralyzed
Seizure
Smoke inhalation
Shock
Snakebite
Staggering/drunken
Straining to eliminate
Stupor
Unconscious
Unresponsive
Unplanned breeding (mismating)
Uncontrollable vomiting
Wheezing

7. The answer should include three of the following:
   a. Prevents missed appointments
   b. Reminds clients of the appointment date, time, and special instructions
   c. Saves the clinic time and money
   d. Prevents inconveniences for the staff and other clients

8. "Hello, Mrs. Green, this is Sandy from Westside Veterinary Hospital. I am calling to confirm Pebbles's appointment with Dr. White tomorrow afternoon, April 15, at 2:00 p.m. Don't forget to bring a stool sample. We'll look forward to seeing you then, unless we hear otherwise."

Unit II: Communication Skills - Written Evaluation

1. b
2. b
3. c
4. b
5. c
6. d
7. a
8. b
9. b
10. a
11. b

Unit III: Basic Office Procedures

Lesson 1: Filing - Activity Sheet

1. a. Card files
   b. Manila folder files
   c. Computerized medical records

2. Answer should include two of the following:
   a. Alphabetical filing
   b. Numerical filing
   c. Terminal digit filing

3. Jeanette Agan
   Kathy Agan
   John Harris
   Sam P. MacDonald
   Mike McDonald
   D. Marie Rutledge

4. 013389
   121389
   456389
   589389
   665389
   987389

Lesson 2: Maintaining Records - Activity Sheet

1. Answer should include two of the following:
   a. Animals, especially purebreds, may have the same basic distinguishing features.
   b. Confusing patients could cause the wrong procedure or treatment to be performed on an animal.
   c. Having the correct animal returned is important to the owner.

2. a. Cage cards
   b. Neck bands

3. a. Pet's name
   b. Owner's name
   c. Date admitted
   d. Reason for admission
   e. Important known medical conditions

4. a. Tattooing is the process of inserting a pigment under the skin to leave a permanent mark.
   b. Microchipping involves injecting a microchip under the skin with a syringe and needle. A scanner or reader is waved over the area of the chip and will display the chip's number on a LCD screen.
   c. Branding is done by burning the skin with a hot iron or by freezing the skin with liquid nitrogen. Hot branding creates a permanent scar on the skin; freeze branding causes the hair to grow in white.
   d. Ear notching is a system of notches on the outer ear. The animal is identified by the location and number of notches.

5. The medical record is a legal document containing information about the animal's life and health history.

6. The answer should include four of the following:
   a. General Medical History includes vaccination and deworming history, results of routine laboratory tests, nutritional information, and past and current medical problems or surgical procedures.

b. Screening Physical Exam Form includes the animal's weight, vital signs, and any abnormal findings of specific body systems found during a clinic visit.

c. Hospital Consent Forms, Fee Estimate Forms, Hospital Admission form, or Hospital Agreement Form document an agreement between the client and the veterinarian regarding a scheduled procedure or treatment and the predicted expense of services, procedures, and medications.

d. Progress notes are records of daily observations by the staff that are considered significant to the patient's general health status and response to treatment.

e. Boarding Agreement Form is for animals staying at the clinic for room and board. These forms contain important information, including the animal's name and description, the reason for the visit according to the owner, the owner's name and phone number, and a method of contacting the owner while the animal is in the clinic's care.

f. Discharge Summary Form summarizes information such as the animal's diagnosis, treatments, or services performed, medications prescribed, postoperative instructions, recommended follow-up visit time, or the vaccinations administered and times for booster vaccinations.

7. Daily progress notes are records of daily observations by the staff that are considered significant to the patient's general health status and response to treatment.

8. The answer should include six of the following:
   a. Double-checking information on admission and consent forms.
   b. Completing information on identification bands or cage cards.
   c. Labeling possessions upon admission.
   d. Observing the animal's general attitude upon admission.
   e. Transferring the animal from the owner's possession to the proper area of the clinic.
   f. Transferring all possessions with the animal if moved from one clinic area to another.
   g. Observing and recording observations on progress notes during the animal's stay.
   h. Recognizing and reporting significant observations to the veterinarian or veterinary technician.
   i. Administering medications or performing treatments at the direction of the veterinarian or veterinary technician.
   j. Ensuring that the animal is in a clean environment and is fed and watered as instructed during its stay.

k. Double-checking discharge instructions and making sure that the animal is clean and that all possessions and medications are presented to the owner at the time of release from the clinic.
l. Assisting the veterinarian or veterinary technician while he or she discusses discharge instructions with the owner. Presenting discharge instructions to the owner for simple, routine situations.

Lesson 3: Maintaining and Restocking Inventory - Activity Sheet

1. Every member of the veterinary team reports low inventory to the appropriate person.

2. Answer should include five of the following:
   a. Make sure supplies are accessible and orderly.
   b. Place frequently used items in easy to reach locations and infrequently used items on top or bottom shelves.
   c. Place older items in front of newer items.
   d. Label shelves or compartments.
   e. Clean and dust.
   f. Remove damaged or expired supplies from inventory and replace with new stock.

Unit III: Basic Office Procedures - Written Evaluation

1. a
2. d
3. c
4. b
5. d
6. d
7. a
8. c

Unit IV: Animal Identification

Lesson 1: Common Laboratory Animals - Activity Sheet

1. a. Mice have smooth hair, a hairless tail, round, erect ears, and protruding eyeballs. Average weight of a mouse is one ounce. As a group they can be noisy; as individuals, they are quiet.

   b. Gerbils are brown, black, or white, with medium-length fur. Adults weigh between 2-4 ounces and males are noticeably larger than females. Their tails are haired with a long tuft on the end. Gerbils make a faint "cheep" sound.

   c. Hamsters have cheek pouches, chunky bodies, short legs, short tails, and very loose skin covered with dense, soft, short fur that may be a variety of colors. Adult hamsters weigh between 3-6 ounces, with the female being larger. The female has three openings at the rear. Hamsters are usually quiet and only make a raspy shriek or squeaky noise when unhappy.

d. Guinea pigs have a solid, dense, round body. They can weigh as much as 2 pounds. Their fur is different depending on the variety; they may have smooth, short hair, swirls in short, coarse hair, long, fine rag-mop type hair, or long and silky hair. Guinea pigs purr, whistle, and chirp.

e. Rats have sleeker and more streamlined bodies than mice. Adults weigh between 10-14 ounces and have an average body length of 8-10 inches. The male is larger than the female. Rats will not make noise unless hurt or afraid.

2. The answer should include three of the following five hamster varieties:
    a. Teddy bear hamster (long-haired)
    b. Golden hamster
    c. Russian hamster
    d. Chinese dwarf hamster
    e. Striped, hairy-footed dwarf hamster

3. The answer should include two of the following four guinea pig varieties:
    a. English
    b. Abyssinian
    c. Peruvian
    d. Angora

4. a. Giant (14-16 pounds)
    b. Medium-sized (4-14 pounds)
    c. Small or dwarf (2-4 pounds)

5. a. Fancy
    b. Fur

6. e and f
7. e
8. b
9. a, b, c, d, f
10. b
11. a, d, f
12. e and f
13. e

Lesson 2: Common Dog and Cat Breeds - Activity Sheet

1. Two of the following sporting breeds:
American Water Spaniel
Brittany
Chesapeake Bay Retriever
Clumber Spaniel
Cocker Spaniel
Curly-Coated Retriever
English Cocker Spaniel
English Setter
English Springer Spaniel
Field Spaniel
Flat-Coated Retriever
German Shorthaired Pointer
German Wirehaired Pointer
Golden Retriever
Gordon Setter
Irish Setter
Irish Water Spaniel
Labrador Retriever
Pointer
Sussex Spaniel
Vizla
Weimaraner
Welsh Springer Spaniel
Wirehaired Pointing Griffon

Two of the following hounds:
Afghan Hound
Basenji
Basset Hound
Beagle
Black and Tan Coonhound
Bloodhound
Borzoi
Dachshund
Foxhound (American)
Foxhound (English)
Greyhound
Harrier
Ibizan Hound
Irish Wolfhound
Norwegian Elkhound
Otter Hound
Petit Basset Griffon Vendeen
Pharaoh Hound
Rhodesian Ridgeback
Saluki
Scottish Deerhound
Whippet

Two of the following non-sporting breeds:
American Eskimo Dog
Bichon Frise
Boston Terrier
Chinese Shar-pei
Chow Chow
Dalmatian
Bulldog
French Bulldog
Finnish Spitz
Keeshond
Lhasa Apso
Poodle (Standard & Miniature)
Schipperke
Shiba Inu
Tibetan Spaniel
Tibetan Terrier

Two of the following terriers:
Airedale Terrier
American Staffordshire Terrier (Pitbull)
Australian Terrier
Bedlington Terrier
Border Terrier
Bull Terrier
Cairn Terrier
Dandie Dinmont Terrier
Fox Terrier (Smooth)
Fox Terrier (Wire)
Irish Terrier
Kerry Blue Terrier
Lakeland Terrier
Manchester Terrier (Standard)
Miniature Bull Terrier

Miniature Schnauzer
Norfolk Terrier
Norwich Terrier
Scottish Terrier (Scottie)
Sealyham Terrier
Skye Terrier
Soft Coated Wheaten Terrier
Staffordshire Bull Terrier
Welsh Terrier
West Highland White Terrier (Westie)

Two of the following toy breeds:
Affenpinscher
Brussels Griffon
Cavalier King Charles Spaniel
Chihuahua
Chinese Crested
English Toy Spaniel
Italian Greyhound
Japanese Chin
Maltese
Manchester Terrier (Toy)
Miniature Pinscher
Papillon
Pekingese
Pomeranian
Poodle (Toy)
Pug
Shih Tzu
Silky Terrier
Yorkshire Terrier (Yorkie)

Two of the following working breeds:
Akita
Alaskan Malamute
Bernese Mountain Dog
Boxer
Bullmastiff
Doberman Pinscher
Giant Schnauzer
Great Dane
Great Pyrenees
Greater Swiss Mountain Dog
Komondor
Kuvasz
Mastiff
Newfoundland
Portuguese Water Dog
Rottweiler
Saint Bernard
Samoyed
Schnauzer (Standard)
Siberian Husky

Two of the following herding breeds:
Australian Cattle Dog (Heeler)
Australian Shepherd
Bearded Collie
Belgian Malinois
Belgian Sheepdog
Belgian Tervuren
Border Collie
Bouvier Des Flandres
Briard
Collie (Rough and Smooth)
German Shepherd Dog
Old English Sheepdog
Puli
Shetland Sheepdog (Sheltie)
Welsh Corgi (Cardigan)
Welsh Corgi (Pembroke)

2. Most cats seen in veterinary practice are not purebred. Cats of mixed or unknown ancestry are called domestic shorthair (DSH) and domestic longhair (DLH).

3. a. Persian
   b. Himalayan
   c. Siamese
   d. Manx

4. Manx

5. Neutering is the term for removing a dog's or cat's reproductive organs. In female dogs or cats, neutering is called spaying.

6. a. Siamese
   b. Collie
   c. Chihuahua
   d. Miniature Schnauzer
   e. Brittany
   f. Dachshund
   g. Rottweiler
   h. Chow Chow
   i. Manx
   j. Scottish Terrier
   k. Boston Terrier
   l. Labrador Retriever
   m. Cocker Spaniel
   n. Alaskan Malamute
   o. Persian
   p. German Shepherd
   q. Shih Tzu

Lesson 3: Common Ratites - Activity Sheet

1. Ratites are large, flightless birds with small wings. They have flat breast bones without a keel or ridge on the sternum.

2. Ostriches are native to Southern Africa.
   Emus are native to Australia.
   Rheas are native to South America.

3. Emus

4. Rheas have brown plumage with white flecking.

5. Adult female ostriches have gray feathers, while male ostriches have black feathers with white wing-tip feathers.

6. Male ratite: Rooster
   Female ratite: Hen
   Young ratite: Chick

7. An incubator is a machine that provides an artificial means of controlling temperature, humidity, and ventilation during egg development.

Lesson 4: Common Horse Breeds - Activity Sheet

1. The answer should include three of the following draft breeds:
    a. Belgian
    b. Clydesdale
    c. Percheron
    d. Shire

2. The answer should include three of the following light horse breeds:
    a. Arabian
    b. American Paint Horse
    c. American Saddlebred
    d. Palomino
    e. Buckskin or Dun
    f. Appaloosa
    g. Missouri Fox Trotter
    h. American Quarter Horse
    i. Tennessee Walking Horse
    j. Thoroughbred

3. One hand equals 4 inches.

4. Palomino: A pale cream to gold color with flaxen or white manes.

    Sorrel: A red color that is lighter than chestnut.

    Bay: Brown with black tail and mane.

    Chestnut: A reddish-brown color.

    Overo: Irregular patches of white on any other base color. Legs are the base color and the white patches appear to be splashed from the belly up.

    Roan: A base color of red, brown, or black that is muted or lightened with a mixture of white hairs.

    Tobiano: Irregular patches of white on any other base color. White is across the top line extending downward in a clearly marked pattern, usually with the white legs.

    Buckskin or dun: A yellowish brown coat with black mane and tail.

    Tovero: Irregular patches of white on any other base color. Has pattern characteristics of both the overo and tobiano coat patterns.

5. a. Arabian
    b. Quarter Horse
    c. Mule
    d. Appaloosa

    e. Belgian
    f. American Paint Horse

6. b
7. e
8. j
9. k
10. h
11. g
12. d
13. f
14. i
15. a
16. c

Lesson 5: Exotic Animals - Activity Sheet

1. Answer should include four of the following animals:
    a. Snakes
    b. Turtles
    c. Iguanas
    d. Birds
    e. Ferrets
    f. Lizards
    g. Hedgehogs

2. Cold-blooded is a term that describes animals that regulate their body temperature to the temperature of their environment. Carnivores are members of the order Carnivora, which means "flesh-eating" or animals that prey on other animals.

3. a. Temperate species - king snake, rat snake, hog-nosed snake, or garter snake
    b. Tropical species - boa constrictor, Burmese python, or reticulated python

4. b
5. c
6. e
7. c
8. c and d
9. a, b, c, d, e
10. a
11. b

Lesson 6: Common Food Animals - Activity Sheet

1. a. Beef production
    b. Milk production
    c. Beef and milk production

2. The answer should include five of the following beef breeds:
   a. Aberdeen Angus
   b. Herefords
   c. Shorthorns
   d. Charolais
   e. Brahman
   f. Simmental
   g. Limousin
   h. Santa Gertrudis
   i. Beefmaster
   j. Brangus
   k. Charbray

3. The answer should include three of the following dairy breeds:
   a. Ayrshire
   b. Brown Swiss
   c. Guernsey
   d. Holstein-Friesian
   e. Jersey
   f. Milking Shorthorn
   g. Red Poll

4. Holstein-Friesian

5. Crossbreeding is the mating of two animals from different breeds, commonly used for beef cattle, swine, and sheep. Two primary purposes for crossbreeding are to increase hybrid vigor and to create new breeds. Increasing hybrid vigor improves desired breed traits. New cattle breeds are often created to produce a breed with better ability to tolerate heat or to gain more weight. New swine breeds often are created to produce breeds that have longer carcasses. New sheep breeds are created to improve wool quality.

6. Breed names that end in "-shire" and the Tamworth have erect ears.

7. Yorkshire

8. a. Mohair - Turkish Angora, Asian Cashmere, and Russian Don
   b. Dairy - Saanen, Toggenburg, and Alpine, including the French, Rock, British, Nubian, and La Mancha
   c. Meat - Boer and Pygmy

9. a. Wool
   b. Lambs

10. The answer should include three of the following sheep breeds:
    a. Cheviot
    b. Columbia
    c. Corriedale
    d. Dorsets

e. Hampshire
f. Montadales
g. Southdown
h. Suffolk
i. Cotswold
j. Rambouillet
k. Karakul

11. a. Vietnamese Potbellied Pig
b. Pygmy goat

12. Cattle: Bovine
Swine: Porcine
Goats: Caprine
Sheep: Ovine

13. e
14. s
15. r
16. j
17. v
18. k
19. m
20. c
21. a
22. i
23. p
24. q
25. h
26. n
27. g
28. t
29. d
30. f
31. u
32. o
33. b
34. l

Lesson 6: Llamas and Alpacas - Activity Sheet

1. The answer should include three of the following:
a. Breeding stock
b. Wool
c. Pets
d. Light pack animals
e. Therapy
f. Investments

2. a. Size, llamas are taller and larger than alpacas.
   b. Fur coverage, alpacas have fur on their legs, necks, and faces.

3. a. "ch aku" (woolly-necked llama)
   b. "q ara" (short-coated llama)

4. a. Huacaya
   b. Suri

5. Crias

6. Camelids

Unit IV: Animal Identification - Written Evaluation

1. b
2. c
3. d
4. b
5. d
6. a
7. c
8. b
9. b
10. b
11. d
12. d
13. b
14. c
15. g
16. a
17. h
18. e
19. f

Unit V: Clinic Safety

Lesson 1: Hazardous Materials - Activity Sheet

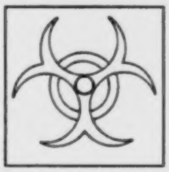
1. a. Infectious waste
   b. Hazardous chemicals

2. a. Sharps
   b. Cultures
   c. Animal wastes

3. Contaminated sharps are disposed of in rigid, leak-proof, puncture-resistant, closeable containers. Containers must have a universal biohazard symbol label.

4. a. Incineration
   b. Steam sterilization (autoclaving)
   c. Chemical treatment (bleach water)

5.



6. Environmental Protection Agency

7. The Hazard Communication Standard is a set of guidelines designed to protect all employees in America from potential injury or illness caused by contact with chemicals in the workplace. It is a "Right to Know" law which dictates that all employees have a right to know about health hazards in the workplace and how to protect themselves from such hazards.

8. a. Manufacturer Information
   b. Hazardous Ingredients/Identity Information
   c. Physical/Chemical Characteristics
   d. Fire and Explosion Hazard Data
   e. Reactivity Data
   f. Health Hazard Data
   g. Precautions for Safe Handling and Use
   h. Control Measures

9. The answer should include three of the following:

   a. A list of all products that contain hazardous material or chemicals used in the workplace and a file of MSDS for every product containing hazardous material or chemicals must be maintained and accessible to employees.

   b. Annual training of the HCS is required for all employees.

   c. Employee training must include a description of work practices that use hazardous chemicals and identify all areas used to store hazardous chemicals.

   d. Employees must be informed of where they may find the written hazard communication program, the list of hazardous chemicals, the file containing MSDS, and identity of the HCC.

   e. Employees must be trained to detect the presence of physical and health hazards of specific chemicals used in each workplace.

   f. Employees using hazardous chemicals must be provided with personal protective equipment, including dosimeters if taking radiographs.

   g. Veterinary practices must scavenge anesthetic gases from the building.

Lesson 2: Maintaining a Safe Environment - Activity Sheet

1. a. Environment (should be circled)
   b. Presence of a viable organism
   c. Susceptibility of the host

2. a. Contact transmission
   b. Airborne transmission
   c. Vector transmission

3. a. Direct contact is transmission that occurs from contacting or touching an infected animal.

   b. Indirect contact is transmission that occurs from contact with items contaminated with a patient's organisms. Indirect contact can result from the use of contaminated needles, instruments, equipment, and surfaces.

   c. Droplet contact is transmission that occurs when the animal coughs, sneezes, or creates large droplet-sized particles. Microorganism is only carried a short distance.

4. Airborne transmission occurs when infectious microorganisms distribute into the air from the residue of evaporated droplets. These microorganisms can stay suspended in the air for a long time and can travel great distances. They can be inhaled or deposited in an open wound.

5. Hand washing

6. a. Washing hands properly.
   b. Eating or drinking only in a designated area.
   c. Never touching eyes, nose, hair, mouth, or mucous membranes while wearing contaminated gloves.

7. Disinfectants are used to destroy microorganisms on nonliving objects. Antiseptics are preparations applied to living tissue to inhibit the growth and development of microorganisms, but not necessarily kill them.

8. Cleaning is the process of removing dirt and organic matter such as feces, urine, and blood. Sterilizing is the process of destroying all forms of life.

9. a. Always read and follow manufacturer's directions and recommendations.
   b. Only use antiseptics and disinfectants for their intended purpose.
   c. Wear gloves when handling disinfectants.

10. a. Mix different disinfectants or antiseptics.
    b. Use products for purposes other than their intended use.

11. k
12. h
13. m
14. a
15. l
16. i
17. j
18. g
19. b
20. f
21. c
22. e

23. d

Lesson 3: Cleaning, Disinfecting, and Maintaining Clinic Areas - Activity Sheet

1. Treatment room - It is important to keep the treatment room clean to reduce the risk of transmission of disease to other animals in the clinic and to the animal undergoing treatment.

2. It is recommended that counters and sinks be disinfected twice daily.

3. The reception area should be checked throughout the day for cleanliness and order. The area should be odor-free and quiet. Maintain reading material to remove torn or outdated materials. Check the orderliness of product displays. Dust mopping and vacuuming are required in the reception area multiple times throughout the day.

4. To prevent the spread of disease to other areas of the clinic and to keep surgical areas sterile never use a mop or broom from another area of the clinic.

Lesson 4: Zoonotic Diseases - Activity Sheet

1. Zoonosis or zoonotic disease is a communicable or contagious disease that can be transmitted from vertebrate animals to man. In true zoonoses, the animals are essential in maintaining the infection in nature while man is simply an accidental host. Zoonosis is sometimes used to include diseases which are common to man and animals. In this other group of diseases, both man and animals may contract the infection from the same source such as water, soil, invertebrate animals, and plants.

2. a. Bacterial diseases One of the following: Anthrax, Brucellosis, Campylobacteriosis, Cat Scratch Fever, Chlamydiosis, Leptospirosis, Salmonella, Plague, Tuberculosis, or Tularemia
   b. Viral diseases Either Encephalitis or Rabies
   c. Fungal diseases Ringworm
   d. Parasitic diseases One of the following: Ancylostomiasis or creeping eruption, Toxocariasis or visceral larva migrans, Toxoplasmosis, or Scabies

3. The answer may include three of the following:
   a. Cooking meats thoroughly.
   b. Maintaining good personal hygiene.
   c. Deworming pets regularly.
   d. Supervising children playing in areas frequented by dogs and cats.
   e. Washing hands after handling pets or their feces.
   f. Not walking barefoot where animals have defecated.
   g. Vaccinating at-risk animals.
   h. Receiving pre-exposure rabies vaccinations.
   i. Using insect repellent and protective clothing.
   j. Not eating suspect animals or their products.
   k. Quarantining new arrivals of pet stores or animal exhibits.
   l. Wearing protective masks and gloves when exposed to possible carriers.
   m. Destroying animals with certain diseases.

n. Controlling rodents and fleas.
o. Wearing gloves when handling feces or aborted fetuses.
p. Disinfecting and disposing of contaminated materials carefully.
q. Protecting food and water from fecal contamination.
r. Avoiding contact with water, soil, and foodstuffs contaminated with urine.
s. Using good hand washing and proper disinfection techniques.
t. Avoiding bites and scratches.
u. Properly disinfecting bites and scratches.

4. b
5. d
6. c
7. a
8. f
9. d
10. e
11. g
12. a
13. c
14. b

Lesson 5: Isolation Procedures - Activity Sheet

1. Infectious diseases are diseases that are capable of being spread from one animal to another.

2. a. Class 1 Infectious Diseases are diseases with a low infectious potential. These diseases have a very slight chance of spreading between patients or from animal to human. Routine use of disinfectants will prevent spread.

   b. Class 2 Infectious Diseases are diseases with a moderate zoonotic potential that require close contact with infected body fluids or a vector to transmit them. Routine use of disinfectants will prevent spread.

   c. Class 3 Infectious Diseases are diseases that require close or direct contact with infected animals or their body fluids. Stringent hand washing, disinfection of cages and equipment, and careful disposal of all wastes are essential for disease containment. Certain Class 3 infectious diseases require animals to be kept in isolation.

   d. Class 4 Infectious Diseases are diseases that are highly contagious and may be spread by direct contact or by airborne transmission. Many of these diseases pose a serious zoonotic threat and are resistant to most means of control. Class 4 infectious diseases require animals to be isolated or destroyed.

3. Isolation is keeping animals with infectious diseases from contact with other animals by housing in facilities or quarters that are separate from the healthy animals. Isolation requires following strict precautions to prevent infection of susceptible animals in the hospital or clinic environment.

4. Animals with certain Class 3 infectious diseases or animals with any Class 4 infectious disease require isolation.

5. The answer should include four of the following precautions:
   a. Wearing protective clothing such as smocks or gowns, masks, shoe covers, and rubber gloves when handling animals in isolation.

   b. Hand washing with an antiseptic soap when entering and leaving isolation. Rinsing hands in a safe disinfectant such as a diluted bleach solution.

   c. Thoroughly cleaning and disinfecting cages and equipment.

   d. Using a footbath containing a disinfectant that is placed at the door for use upon entering and leaving isolation.

   e. Keeping equipment and clothing used in isolation away from the rest of the hospital or clinic. Using disposable smocks, gloves, masks, and foot covers for the isolation area.

6. Quarantine is the isolation of an animal or animals suspected to have been exposed to an infectious disease.

7. Animals placed in quarantine must remain isolated for the duration of the disease's incubation period, the usual time between the animal's contact with the infection and the appearance of disease symptoms.

Lesson 6: Animal Behaviors - Activity Sheet

1. a. Environment
   b. Situation
   c. How the animal is handled

2. Answer should include three of the following:
   a. Raise head, ears, and hackles
   b. Angle ears forward
   c. Elevate the front half of the body
   d. Curl lips to reveal front teeth
   e. Hold tail high

3. Answer should include three of the following:
   a. Flip back and forth
   b. Lay ears flat against the head
   c. Strike with the front feet
   d. Hiss

4. Answer should include two of the following:
   a. Open mouth followed by a hiss
   b. Twitch tail
   c. Lash out with tail in defense

   d. Body flattened to the ground
   e. Raised dorsal crest
   f. Extended dewlaps

5. Answer should include two of the following:
   a. Kick
   b. Bit
   c. Lung forward
   d. Strike with the forelegs
   e. Lay ears back against neck

6. Answer should include two of the following:
   a. Snort
   b. Paw the ground
   c. Hold their head vertical to the ground
   d. Cow-kick

7. Answer should include two of the following:
   a. Cow kick or kick backwards with a quick jab
   b. Bite
   c. Lay ears back against the neck
   d. Raise tail
   e. Snort or make a clicking sound

8. Answer should include six of the following:
   a. Use the buddy system when working with large animals or animals with a nature that creates the potential for physical harm.

   b. Never put yourself in a situation that you are not physically or mentally prepared to handle.

   c. Receive proper training and learn what is normal behavior for different species.

   d. Work in an area that closes securely so that an improperly restrained animal cannot escape from the facility.

   e. Be familiar with proper restraint techniques and keep restraint devices within reach. Only use restraint in a protective manner.

   f. Focus on what you are doing and also pay attention to what is going on around you.

   g. Approach any animal slowly and calmly.

   h. Realize that animals are intimidated by being cornered or towered over.

   i. Keep your eyes on the animal at all times, but avoid direct eye contact or putting your face directly in the animal's face.

j. Speak softly and soothingly.

k. Do what needs to be done as quickly and painlessly as possible.

l. Realize that in some cases, animals cannot be handled without sedation.

m. Expect the unexpected.

n. If in doubt about an animal, ask the veterinary technician or veterinarian for help.

Unit V: Clinic Safety - Written Evaluation

1. b
2. a
3. b
4. c
5. c
6. b
7. c
8. a
9. d
10. b
11. a
12. c
13. a
14. c
15. d
16. c
17. c
18. a
19. b
20. d
21. b
22. d
23. a
24. c
25. b
26. f
27. e
28. c
29. h
30. a
31. g
32. d
33. b
34. a
35. c
36. h
37. f
38. k
39. d
40. e
41. i
42. g
43. j

Unit VI: Animal Care

Lesson 1: Handling and Restraining Animals - Activity Sheet

1. a. Physical restraint exerts direct or indirect control over certain body parts of the animal or diverts the animal's attention. It is used for all unpleasant procedures, including physical examinations, bathing, administering oral medications or injections, drawing blood, and taking radiographs.

   b. Chemical restraint is the use of drugs such as tranquilizers and anesthetic agents to produce a calmer, more approachable patient. Chemical restraint is reserved for very painful procedures and for animals with behavior that makes a procedure unsafe.

2. A muzzle is a device used to cover the mouth of an animal to prevent it from biting or eating.

3. Before removing any animal from a cage or run always check for potential routes of escape in case the animal gets loose. Make certain that all doors and windows to the outside are closed.

4. Claws

5. Do not pull at the tip of the tail because the skin can be torn off.

6. Improperly handling a rabbit can cause damage to its spine and possibly internal bleeding.

7. The best way to approach an iguana is from the front.

8. Approach a horse from left side or on the same side that it is being worked on.

9. a. Nose tong
   b. Tail restraint

10. A snare is a cable or rope noose that is placed around the top half of a pig's snout and pushed to the back of its mouth.

11. Answer may be either:
    a. Boars are very dangerous.
    b. The sound frequency level of their squeals can be as high as 100-110 decibels, which can cause permanent hearing damage.

12. Wool can be easily pulled out causing blemishes to the wool and bruising of the body, both of which will decrease the value of the sheep.

13. A proper fitting halter is very important. Llamas and alpacas normally breathe through their noses. If a halter is putting too much pressure on the lower tip of the nose, it will interfere with breathing and make the animal nervous and uncomfortable.

14. i, j, l
15. e, l, i
16. b, d, f, k
17. a
18. b, c, g
19. h, i, j
20. h

Lesson 2: Observation Skills - Activity Sheet

1. Answer should include abnormal observation of five of the following:
   - Mental attitude
   - Aggressive or passive behavior
   - Pain
   - Distressed breathing
   - Cyanosis or bluish discoloration of the skin and mucous membranes
   - Scratching
   - Hair loss
   - Bleeding
   - Change in skin color
   - Any discharge or foul odor
   - Skin lumps
   - External parasites
   - Discharge or cloudiness to the eye
   - Squinting, pawing, or rubbing of the eyes
   - Shaking of the head
   - Rubbing or scratching ears
   - Problems chewing or swallowing
   - Panting in the cat
   - Sneezing, coughing, or nasal discharge
   - Difficulty breathing (labored, shallow, deep, rapid, or slow)
   - Vomiting
   - Diarrhea
   - Partially digested or undigested food in stool
   - Frequency of defecation
   - Volume and color of stool
   - How much and how quickly food is eaten
   - Amount of water intake
   - Amount and color of the urine
   - Blood, pus, mucus, discoloration or foul odor in urine or stool
   - Straining or urinating more frequently
   - Limping or pain when touched or exercised
   - Response to its environment
   - Inability to walk
   - Seizures

2. Cyanosis is a bluish discoloration of the skin and mucous membranes caused by blood not properly transporting oxygen.

3. Answer should include three of the following:
   a. Scratching
   b. Hair loss
   c. Change in skin color
   d. Discharge or foul odor
   e. Skin lumps
   f. External parasites

4. Answer should include three of the following:
   a. Animal's dietary intake.
   b. If the animal has eaten all of its food.
   c. Whether it ate the food quickly or picked at it.
   d. Monitor the animal's water intake and make sure the animal is not turning over the water container.

Lesson 3: Parasite Identification - Activity Sheet

1. A parasite is a plant or animal living in or on another organism, called its host.

2. Ectoparasites are external parasites and endoparasites are internal parasites.

3. Answer should include four of the following external parasites:
    a. Fleas
    b. Ticks
    c. Lice
    d. Mites
    e. Maggots
    f. Flies

4. Answer should include four of the following internal parasites:
    a. Ascarids or roundworms
    b. Strongyles
    c. Hookworms
    d. Whipworms
    e. Tapeworms
    f. Heartworms
    g. Protozoa or coccidia, toxoplasma and giardia

5. Fleas

6. f
7. a
8. d
9. g
10. c
11. b
12. e
13. h

Lesson 4: Cleaning Animal Compartments - Activity Sheet

1. Disinfectants do not work well in the presence of organic matter.

2. Many zoonotic diseases are transmitted to humans by contact with animal feces. Hand washing is very important after cleaning animal compartments to prevent disease transmission.

3. a. Wash hands and wear gloves as indicated on cleaning products.
    b. Remove the animal from cage or run and place in a clean cage or holding area. Make sure cage card is also moved with the animal.
    c. Remove all organic matter, bedding, litter pans, water and food bowls from the cage. If bedding is soiled with feces or other solids, discard the bedding in an appropriate container. Reusable bedding should be washed. Discard uneaten food, water, and cat litter.
    d. Apply approved disinfectant solution to entire cage or run surface including the front of the cage. Thoroughly scrub all surfaces to remove any debris.
    e. Wipe all cage surfaces to remove any remaining debris. Remove any debris, hair, dirt, etc., from floor grates in runs. Removal of all hair is critical.
    f. Sponge or spray the surface again with the disinfectant. Leave the surface moist for the amount of time recommended by the directions for the disinfectant.

g. After the disinfectant has dried, place clean bedding and/or a cat litter pan filled with clean litter into the cage or run before replacing the animal.
h. Replace the animal in cage or run and secure door tightly.
i. Wash hands after handling each animal. As mentioned in Unit V, Lesson 3, many zoonotic diseases are transmitted to humans by contact with animal feces. Hand washing is very important after cleaning animal compartments to prevent disease transmission.

4. a. Wash hands and wear gloves as indicated on cleaning products.
b. Remove food and water containers without stressing the bird.
c. Discard uneaten food and water.
d. Clean and rinse containers.
e. Dry containers and replace with appropriate food and water.
f. Remove bottom tray and discard the cage liner.
g. If soiled, clean and disinfect the tray.
h. Dry the tray and replace with a clean cage liner.
i. Wash hands.

5. a. Wash hands and wear gloves as indicated on cleaning products.
b. Carefully remove the animal from cage and place in a clean cage. Move cage identification to the new compartment with the animal.
c. Remove all organic matter such as bedding shavings, feeders, and waterers from the cage.
d. Apply an approved disinfectant solution to the entire cage and thoroughly scrub all surfaces to remove any debris. The urine from rabbits and some rodents contains crystals that form a hard scale which can be difficult to remove.
e. Wipe all cage surfaces to remove any remaining debris.
f. Thoroughly rinse, disinfectant, and allow the cage to air dry.
g. Place clean bedding in the cage before replacing the animal.
h. Put the animal in the cage and secure door or lid tightly.
i. Place fresh water and food in clean containers.
j. Wash hands.

6. a. Wash hands and wear gloves as indicated on cleaning products.
b. Remove wet or stained bedding, fecal material, and soiled food. Place discarded bedding and food in the designated area. Place fresh bedding in the stall.
c. Empty and rinse water buckets to remove any grain or hay particles. Refill water buckets.
d. When the animal is discharged, remove all bedding, food, and water. The stall and buckets for water and feed must be cleaned and disinfected with an approved disinfectant.
e. Wash hands.

7. These areas are sanitized daily and disinfected when the animal is dismissed from the clinic.

8. a. Rinse containers with water to remove any remaining food or debris.
b. Scrub containers inside and out to remove all debris.
c. Rinse containers.

- d. Place containers in an approved disinfectant solution and soak for appropriate time.
- e. Rinse containers with water. Some situations may require rinsing with a diluted bleach solution before the final rinse.
- f. Allow to air dry.
- g. Wash hands.

Lesson 5: Feeding - Activity Sheet

1. a. Life Stages Diets
   b. Therapeutic Diets
   c. Special Feeding Orders

2. Answer should include two of the following:
   a. Some diagnostic tests involving blood or radiographs (x-rays) require that the animal be fasted for a specific length of time.
   b. Animals with sensitive digestive tracts often require multiple feedings of small meals to minimize upset stomachs.
   c. Diabetic animals must be fed on a set schedule related to their insulin injections.
   d. It may be issued for an animal that has already had a vomiting or diarrhea problem.
   e. It may be issued to allow an animal's system time to rest before reintroducing food and water.
   f. To minimize the risk of vomiting under anesthesia.

3. NPO is a common feeding order that means nothing "per os" or nothing by mouth. NPO means no food or water.

4. An NPO order may be issued to minimize the risk of vomiting under anesthesia. It may also be issued when an animal has already had a vomiting or diarrhea problem and the veterinarian wishes to allow its system time to rest before reintroducing food and water.

5. Free access, free choice, or ad lib means that food or water is available at all times.
6. a. Moist (canned)
   b. Semi-moist (soft but not wet)
   c. Dry (kibbles) - Dry foods should be circled.

7. Horses: Fed a very clean, high-quality pasture or hay. They require more digestible fiber sources than ruminants. Horse owners prefer alfalfa or timothy hays. Working horses that expend large amounts of energy in exercise are often given a supplement of high-energy grains.

   Cattle: Fed roughage in the form of high fiber foods such as grass, hay, and silage, which is chopped cornstalks fermented in a silo. The two basic types of hay are grass hay, including fescue, orchard grass, and timothy, and legume hay, including clover, alfalfa, and lespedeza.

Swine: Fed concentrated food sources, primarily grains such as corn, oats, wheat, rice, millet, and sorghum.

8. a. Colic
   b. Laminitis

9. Answer should include eight of the following:
   a. Store food separate from equipment, supplies, and chemicals.
   b. Stamp containers with the date the food arrived. Follow the "First In, First Out" rule to avoid old or spoiled food. Rotate older food to the front and new food to the back.
   c. All food should be placed on pallets or shelves. Never stack food directly on the floor. Food stored on the floor prevents easy cleaning of the floor and storage area and is more difficult to inspect.
   d. Store opened food in a clean, covered container. Never use a container that has already been used for toxic substances or chemicals.
   e. Mark all food containers to identify the contents.
   f. Protect food from temperature and humidity extremes. Protection from water is also important.
   g. Seal the food storage area to prevent infestations of insects or rodents. Keep doors to the storage area closed and protect access to food.
   h. Never feed food contaminated by insects or rodents. Remove and destroy any damaged or contaminated food.
   i. The food storage area should be well-ventilated, easily cleaned, and well-lighted.
   j. Refrigerate perishable food already opened in covered, dated containers. Discard leftover food after 24 hours if not consumed.
   k. Inspect all food for odors, discoloration, or unusual appearance before feeding. Destroy any product that seems abnormal.

10. h
11. k
12. l
13. m
14. d
15. i
16. b
17. c
18. a
19. f
20. g
21. j
22. e

Lesson 6: Weighing - Activity Sheet

1. Previously documented weight is an important piece of information as to the seriousness of the current health problem.

2. Answer should include four of the following:

a. Platform scale - small and large animals
b. Infant scale - small animals
c. Bathroom or balance scales - small animals
d. Weight measurement tape - large animals
e. Portable scale - large animals

3. a. Turn on scale.
   b. Wait for scale to calibrate.
   c. Switch to either pounds or kilograms.
   d. Place the animal on the scale.
   e. Read and record weight. Always write kilograms (kg.) or pounds (lbs.) after the weight.
   f. Clean and disinfect the platform surface after use if the animal soils it.

4. Pick up the animal and hold it securely. Step onto the scale and have someone read the weight. Place the animal back in its cage and weigh yourself. Subtract your weight from the total weight. The difference is the animal's weight. Record weight in the record.

5. 16 ounces

6. Weight measurement tape

Lesson 7: Bathing and Dipping Dogs and Cats - Activity Sheet

1. A dip is a solution that is diluted with water before being applied to an animal's skin and coat. Most dips are insecticides, chemical products intended to kill external parasites. Some dips are medicines that are applied to treat certain skin conditions.

2. A pour-on is a concentrated insecticide that is ladled onto the backs of cattle to control external parasites.

3. a. Be sure tub is clean and all necessary items are within reach before beginning the bath. Bathing items include ophthalmic ointment (eye ointment), shampoo, premixed dip, and a towel.
   b. Wear protective rubber apron, boots, and gloves if possible to avoid soaking your clothing.
   c. Apply ophthalmic ointment before bathing to protect the animal's eyes from chemical injury.
   d. Place a small piece of cotton in each ear to prevent water from getting into the animal's external ear canal. DO NOT forget to remove the cotton when bathing is complete.
   e. Note the location of any large mats of hair that will interfere with bathing and report these to the proper personnel before bathing. Mats of hair should be clipped before wetting the animal.
   f. Before applying water to the animal, check the temperature of the water with your hands to ensure that it will not burn. Animals prefer a cooler bath than people. The water may feel cooler through gloves than it actually is.

4. Lukewarm

5. Bathe animals infested with fleas starting at the head and working back.

6. Hyperthermia is a serious medical condition in which the animal can die from overheating.

7. An apron, rubber or latex gloves, and goggles

8. a. Remove hair or other debris from the bathtub and drain.
   b. Clean and sanitize the tub using the proper disinfectant.
   c. Wash hands.

9. a. Pyrethrins are the oldest and least toxic of the insecticides used in veterinary medicine. Pyrethrin is a derivative of the chrysanthemum, a natural product that is virtually non-toxic to most animals, though overuse can cause toxicity in cats, very young puppies and kittens, and very small animals in poorly ventilated areas. Pyrethrins are seen in shampoo, spray, and dip forms and may be used on many of the common companion animals. They are known for their "quick-kill" effect on insects but have little residual activity.

   b. Carbamates or carbaryl are insecticides that are stronger than pyrethrins but weaker than organophosphates and chlorinated hydrocarbons. Carbaryl usually comes in the form of shampoos and powders.

   c. Organophosphates are very strong chemicals which can affect a mammal's nervous system in the same way they affect an insect's nervous system. Organophosphates are commonly available as dips, powders, and pour-ons, but are less popular compared to the new generation of insecticides that are less toxic and equally effective. Cats, especially Persians and Himalayans, are extremely sensitive to organophosphates and should never be treated with such products.

   d. Chlorinated hydrocarbons are insecticidal chemicals that are currently rarely used because of their potential for toxicity and their adverse effects on the environment.

10. Answer should include four of the following:
    a. Lethargy
    b. Salivation or drooling
    c. Vomiting
    d. Diarrhea
    e. Constriction of the pupils
    f. Breathing difficulties
    g. Restlessness
    h. Drunken gait
    i. Droopy eyelids
    j. Muscle twitching
    k. Trembling
    l. Convulsions or seizures

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11. a. Report any suspicious toxic signs in recently bathed or dipped animals to the veterinarian immediately.
    b. The animal must be washed immediately in plain soap and water to remove insecticidal residues.

12. a. Carbamates
    b. Organophosphates

Unit VI: Animal Care - Written Evaluation

1. a
2. a
3. c
4. d
5. b
6. c
7. b
8. b
9. c
10. c
11. b
12. e
13. b
14. f
15. d
16. c
17. h
18. a
19. g
20. f
21. a
22. d
23. g
24. c
25. b
26. e
27. h
28. g
29. f
30. h
31. c
32. a
33. e
34. d
35. b

Unit VII: Clinical Procedures

Lesson 1: Routine Clinic Procedures - Activity Sheet

1. Preventative health care programs are programs designed by the veterinarian to help prevent disease and health problems in an individual animal or herd of animals. In small animal practice, preventative health care is often called "well animal care." Most major health problems in animals are easier to prevent than to treat.

2. The answer should include three of the following:
   a. Vaccinations
   b. Surgical neutering
   c. External and internal parasite preventions
   d. Grooming
   e. Proper nutrition

3. The answer should include three of the following:
   a. Vaccinations

b. Neutering
c. External and internal parasite preventions
d. Proper nutrition

4. Vaccination or immunization is the injection of animals with vaccines developed to produce immunity to specific diseases.

5. The answer should include three of the following:
Canine distemper (CDV)
Canine adenovirus (CAV)
Infectious canine hepatitis (ICH)
Canine parainfluenza
Leptospirosis
Canine parvovirus (CPV)
Canine coronavirus
Infectious tracheobronchitis (kennel cough)
Lyme disease
Feline viral rhinotracheitis (FVR)
Feline calicivirus (FCV)
Feline panleukopenia
Feline leukemia (FeLV)
Feline infectious peritonitis (FIP)
Rabies

6. The answer should include three of the following:
Tetanus
Equine encephalomyelitis (VEE, WEE, EEE)
Equine rhinopneumonitis
Equine influenza
Strangles
Equine viral arteritis
Potomac horse fever
Infectious bovine rhinotracheitis (IBR or Rednose)
Parainfluenza 3 (PI3)
Bovine respiratory syncytial virus (BRSV)
Bovine viral disease (BVD)
Haemophilus somnus
Pasteurella multocida & Pasteurella haemolytica
Leptospirosis
Vibriosis
Trichomoniasis
Brucellosis (OCV-official calfhood vaccine, bangs)
Clostridial organisms
Moraxella (pinkeye)
Leptospirosis
Porcine parvovirus (PPV)
Transmissible gastroenteritis (TGE)
Porcine rotavirus
Clostridium perfringens Type C

Neonatal porcine colibacillosis
Swine dysentery
Bordatella, Pasteurella, & Haemophilus
Erysipelas
Pseudorabies
Streptococcus
Enterotoxemia (overeating disease)
Tetanus
Contagious ecthyma (soremouth, orf)
Foot rot
Bluetongue (BT)
Vibriosis
Chlamydia

7. A diagnostic procedure is done to recognize or diagnose a disease or parasite problem, to evaluate the severity of an injury, or to evaluate the injury's response to a therapy.

8. The answer should include two of the following:
   Fecal flotation
   Urinalysis
   Heartworm checks in dogs
   Feline leukemia and feline immunodeficiency tests in cats
   Complete blood counts (CBCs)
   Blood chemistries
   Skin scrapings (samples of skin evaluated microscopically for parasites)
   Cultures of body secretions for bacterial identification and selection of appropriate antibiotics
   Neurological examinations (evaluation of the nervous systems by checking reflexes)
   Special eye examinations such as measuring tear production or intraocular pressure
   Ultrasound (a non-surgical method of evaluating soft tissues; often used for pregnancy diagnosis or evaluating heart problems)
   Radiographs (X-rays)
   EKG (electrocardiogram, an evaluation of the electrical activity of the heart muscle)
   Biopsies (microscopic examination of large sections of tissue specimens)
   Fine needle aspirate (microscopic examination of very small tissue specimens)

9. The answer should include two of the following:
   Fecal egg counts
   Tuberculin skin tests
   Brucellosis tests
   Breeding soundness examinations/sperm counts
   Coggins tests (blood tests for Equine Infectious Anemia)
   Uterine cultures in mares (to prevent fertility problems)
   Lameness/nerve blocks

10. Therapeutic Procedures are procedures that involve therapy or treatment for specific diseases or other physical or behavioral abnormalities. Therapeutic procedures may be medical, such as treating an infection with antibiotics or giving a blood transfusion, or surgical, such as repairing a broken leg.

11. Medical procedures are procedures that diagnose or treat specific conditions with medicine instead of surgery. Surgical procedures involve the manual manipulation of internal or external tissues with surgical instruments.

12. The answer should include two of the following:
Ear flush (deep cleansing of the ear canal commonly done in dogs with ear infections)
Toenail trims (trimming the toenails of dogs, cats, pocket pets, and birds)
Dental prophylaxis (scaling the tartar off and polishing the teeth of dogs and cats; usually done under general anesthesia)
Tattooing and microchipping
Applying medicated shampoos and dips
Applying insecticides for external parasite control
Treating heartworm disease
Wing clipping (cutting the length of the primary feathers in pet birds to limit their ability to fly)
Strategic deworming
Beak trimming (shortening and smoothing the beak of pet birds to prevent overgrowth from interfering with their ability to eat)
Teeth clipping (clipping the continuously growing teeth of rodents such as rabbits and guinea pigs to prevent overgrowth from interfering with their ability to eat)

13. The answer should include two of the following:
Vaccination
Castration
Dehorning
Applying fly tags
Applying pour-ons for insect control
Routine deworming
Hoof trimming in smaller ruminants
Clipping the teeth of baby pigs
Branding and tattooing
Embryo transfer (procedure performed by specialty veterinarians and animal reproductive physiologists)
Floating the teeth (filing down rough edges to allow productive chewing and better feed utilization)
Spraying with fly sprays or hanging fly repellants from the halter
Routine hoof care and periodic trimming/shoeing by a qualified farrier (horseshoer)
Sensible conditioning exercise (a medical necessity in the athletic horse)
Culture and biopsy of uterine tissues for breeding management
Careful attention to good quality nutrition and sanitation measures, especially in stalls
Routine blood cultures for Salmonella in hospital settings

14. The answer should include two of the following: n
Neutering (castration in the male and spaying in the female dog, cat, ferret, or rabbit
Castration (removal of the testicles)
Spaying (removal of the ovaries and uterus called an ovariohysterectomy or OHE)
Declawing (onychectomy - removal of the tip of the toe from which the claw grows in cats)

Tail docking (surgically amputating the tail at a specified length in certain breeds, including Cocker Spaniels, Doberman Pinschers, Rottweilers, Poodles, and German Shorthaired Pointers; preferably done at 3-5 days of age without benefit of anesthesia or later under general anesthesia) Some dogs are naturally bobbed-tailed.
Dewclaw removal (removal of the small residual "thumb" on the inside of the upper paw of dogs; can be done when tails are docked or later under general anesthesia)
Ear cropping (cutting off part of the flap of the ear in certain breeds of dogs: Doberman, Boxer, and Great Dane)

15. The answer should include two of the following:
Castration (done in male animals not to be bred to reduce aggressive behavior and to encourage maximum weight gain in food animals and horses)
Dehorning (removal or destruction of the horn of certain breeds of livestock to reduce injuries associated with the horns; usually done with heat, surgery, or caustic creams with good restraint and local anesthetic)
Spaying (removal of the ovaries in feedlot heifers not to be bred to minimize weight loss related to heat cycles)
Tail docking (done in lambs to prevent feces from collecting on the tail)
Hernia repair in baby pigs

Lesson 2: Caring for Equipment in the Veterinary Clinic - Activity Sheet

1. Laboratory equipment: microscope, microscope slides and cover slips, centrifuge, refractometer, Coulter counters, glucometers, blood tubes, fecal and urine tubes, and Culturettes®

Radiographic equipment: radiograph unit, film cassettes, radiograph processor, and radiograph developing tanks

Surgical equipment: surgical instruments including scissors, clamps, scalpels, scalpel blades, and forceps, drapes, and surgical pouches

Anesthetic equipment: anesthetic machine, vaporizer, oxygen and nitrous oxide tanks, endotracheal tubes, induction chamber, and mask

2. Ultrasonic cleaning is an alternative to manual precleaning and lessens the risk of being cut by sharp, contaminated instruments. After presoaking, instruments are placed in a basket, immersed into a special disinfectant solution, and subjected to sound waves for five minutes before being rinsed thoroughly and patted dry.

3. a. Name of the instrument or pack
b. Date of packing and sterilization
c. Initials of the person preparing the instruments

4. D
5. D
6. D
7. E

8. R
9. R
10. E
11. E
12. d
13. g
14. k
15. f
16. c
17. j
18. e
19. i
20. a
21. h
22. b

Lesson 3: Collecting Specimens - Activity Sheet

1. Answer should include four of the following:
    a. Fecal specimens - specimens may be picked up off the ground, out of a litterpan, or collected with a fecal loop
    b. Urine specimens - free catch voided samples, catheterization, or cystocentesis
    c. Blood samples - venipuncture
    d. Serum samples - blood clots in a clot tube and then centrifuged to separate the serum from the clot
    e. Skin scrapings - scraping the skin surface with a scalpel, ear swabs
    f. Cytology - swabs or fine needle aspirates
    g. Biopsy - cutting a large sample of tissue

2. a. Fecal samples
    b. Urine samples
    c. Whole blood samples
    d. Serum samples

3. a. Put on gloves.
    b. After the animal defecates, collect a teaspoon-sized sample of feces with a gloved hand or wooden tongue depressor and place in a container or cup.
    c. Remove gloves.
    d. Wash hands.
    e. Label the container with the animal's name and patient number as directed by the veterinary technician or veterinarian.
    f. Present sample to the appropriate staff member, veterinary technician, or veterinarian, or store properly.

4. a. Patient's name and number
    b. Client's name
    c. Date and/or time collected

5. l

6. a
7. b
8. f
9. g
10. c
11. e
12. d
13. h
14. i
15. k
16. j

Lesson 4: Laboratory Procedures - Activity Sheet

1. Fecal flotation is used to identify potential worm eggs.

   Filter test for heartworms is used to identify any juvenile heartworms (microfilariae) in the bloodstream.

   Urinalysis is used to screen for urinary tract infections.

   Skin scrapings are used to diagnose sarcoptic or demodectic mange, and some other types of skin diseases.

   Ear mite check is used to observe any parasites.

   Hematocrit measures the percentage of blood that is made of blood cells versus the amount of chemicals and water and aids in evaluating anemia and dehydration.

   Complete blood count helps detect the presence of infection.

   Harvesting serum is used to evaluate major body systems such as the liver or kidney.

2. a. Urine chemistries measure the pH, blood, protein, bilirubin, sugar, etc., using Multistix or similar test strips.

   b. Urine specific gravity measures the relative amount of solids (cells, blood, crystals, bacteria) in the urine as compared to liquid using a refractometer.

   c. Urine sediment exam is the examination of the solids that settle to the bottom of the test tube after the urine is centrifuged and the fluid portion is poured off.

3. Slides must be lifted straight up rather than slid off sideways.

4. The syringe that was used to mix the sample may be rinsed with water and reused only if the sample was negative.

5. a. Urine samples should be refrigerated in clean, covered containers.
   b. Urine specimens should be read within 12 hours of collection.

6. a. Patient's name
   b. Date of collection

7. Requisition forms are forms completed when a specimen is sent to an outside laboratory. Requisition forms include information about the patient and the tests requested by the veterinarian.

Lesson 5: Animal Disposal - Activity Sheet

1. a. Cremation or incineration
   b. Burial

2. To humanely put an animal to death

3. a. Put on gloves.
   b. Place the animal in a plastic bag in a natural sleeping position.
   c. Label the bag with the names of the animal and the client, along with final disposition instructions.
   d. Freeze or refrigerate body until the owner is ready to pick up the animal. Because the natural decay process begins immediately after death, the body will need to be refrigerated or frozen.
   e. If preparing the body for home burial, remove the body from the bag and place the animal in a cardboard casket, or wrap it in an old sheet, blanket, or rug before returning it to the owner.
   f. Remove gloves.
   g. Wash hands.

4. a. The date
   b. The veterinarian's name
   c. Animal's name
   d. Owner's or client's name
   e. Final disposition instructions

Unit VII: Clinic Procedures - Written Evaluation

1. b
2. d
3. a
4. c
5. b
6. a
7. d
8. a
9. b
10. c
11. R
12. D
13. D
14. R
15. D
16. D
17. D
18. R
19. c
20. e
21. h
22. d
23. g
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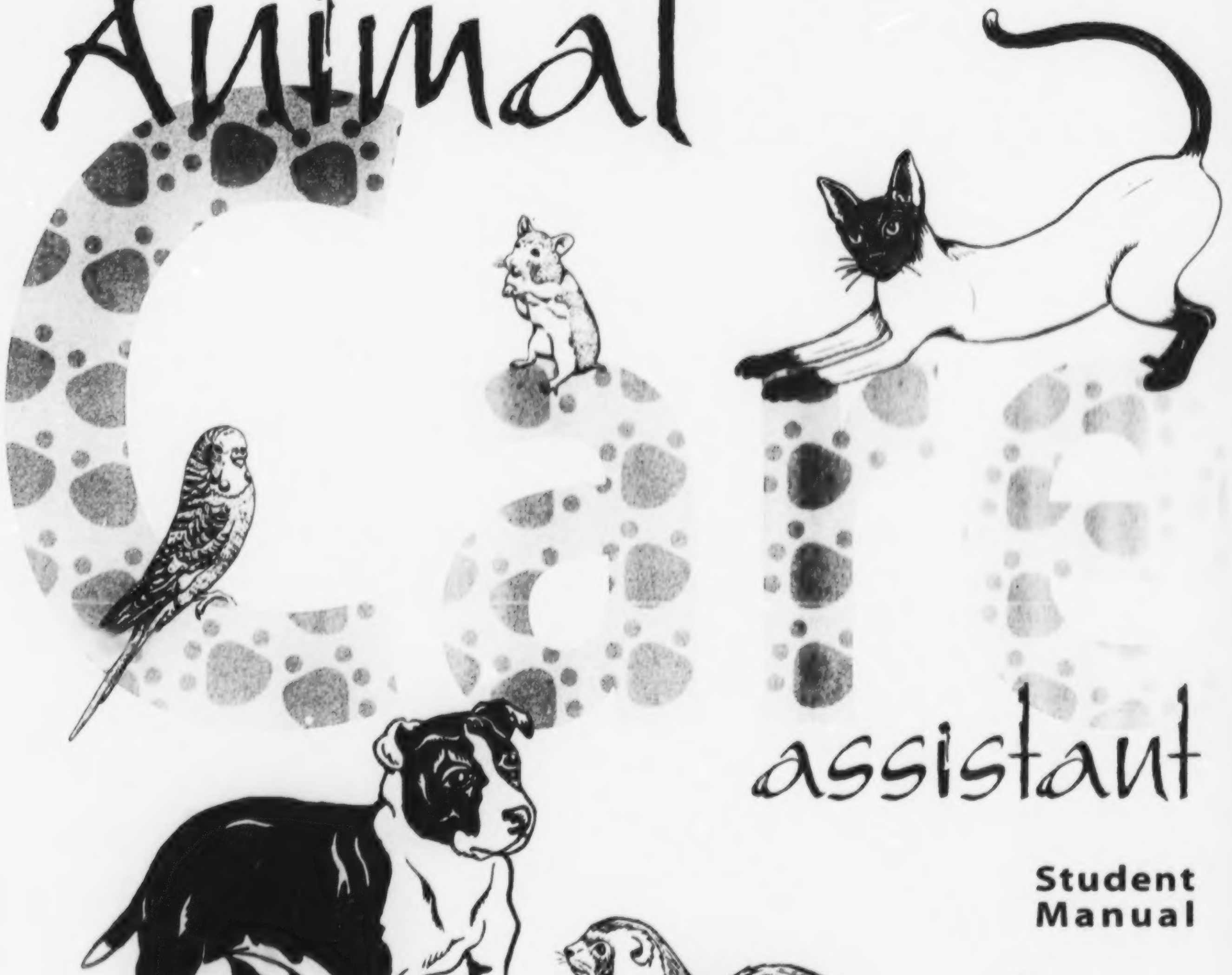
Animal Care assistant



Student Manual

Instructional Materials Laboratory
University of Missouri-Columbia
Missouri Department of Elementary and Secondary Education

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Animal Care Assistant

Student Manual

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Foreword

This *Animal Care Assistant* manual is designed to be used independently by students who are in secondary health occupations programs, by students who are in agricultural education programs, or by individuals receiving on-the-job training in a veterinary clinic. A clinical site (veterinary clinic) is needed for individuals to practice administrative medical assistant skills and to demonstrate mastery of these skills.

This manual is divided into seven units: Introduction to the Field of Veterinary Medicine, Communication Skills, Basic Office Procedures, Animal Identification, Safety, Animal Care, and Clinic Procedures. Units are further divided into lessons, which contain lesson objectives, key terms, content information, illustrations, and activity sheets as appropriate for the content. Activity Sheets are designed to assist the learner in mastering the information in each lesson. The Clinical/Laboratory Activities included on the Activity Sheets should be reviewed or discussed with the instructor or clinical supervisor upon completion.

Each unit has a written evaluation that should be taken after all lessons in the unit are studied. A score of a least 80 percent indicates that the student has satisfactorily completed the unit and may proceed to the next unit. Students should review any lessons or materials that correspond to missed evaluation items. Skill Sheets provide a record for mastery of the steps of procedure for each skill. The learner should practice the skills outlined in the lesson before requesting evaluation of the skills.

A Unit Checklist, located at the end of each unit, provides a method for keeping track of Activity Sheets, Skill Sheets, and Written Unit Evaluations to be completed in this unit.

The Written Unit Evaluations and Skill Sheets are included at the end of the manual. If you are taking this instruction under the supervision of an instructor or clinical supervisor, these pages may be removed from your manual. When you are ready to complete a Written Unit Evaluation or Skill Sheet, check with your instructor or clinical supervisor.

Those using this manual on an individual basis may want to order the Instructor's Key, which provides answers to Activity Sheets and Unit Evaluations.

Prior to beginning this manual, the student should successfully master all competencies in the *Health Care Assistant* Core Curriculum. The Core Curriculum is designed to teach information and skills common to all health care workers.

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Glossary

A

Act of commission is a type of malpractice in which the wrong medical procedure is performed, such as amputating the wrong leg.

Act of omission is a type of malpractice in which adequate care is not provided, such as not performing a needed diagnostic test.

Ad lib is a feeding disorder that means food or water is available at all times.

Aggressive behavior is hostile, injurious, or destructive behavior.

Airborne transmission occurs when infectious microorganisms distribute into the air from the residue of evaporated droplets and are inhaled or deposited in an open wound.

Alphabetic filing systems put files in alphabetical order by the first letter of the animal owner's last name and then by the first name and middle initial.

Ancylostomiasis is a syndrome in human beings caused by infective larvae of the common hookworm species, *Ancylostoma*, of dogs and cats. It develops when hookworm larva burrows through a person's skin, causing a stinging sensation, followed by dermatitis, or inflammation of the skin.

Anesthetic procedures are any procedures that require anesthesia in order to be completed efficiently, effectively, and painlessly.

Animal care assistants are members of the veterinary team who are trained through vocational programs and on-the-job training to perform basic tasks such as feeding, watering, bathing, restraining, moving and exercising animals, cleaning, clerical, and office duties.

Animal wastes are carcasses, blood, tissues, urine, and feces that can produce an infectious disease.

Anthelmintic is a dewormer.

Anthrax is a disease of all warm-blooded animals caused by the bacteria *Bacillus anthracis*. It is characterized by acute fever and blood poisoning and is rapidly fatal.

Anticoagulant is a substance that prevents blood from clotting.

Antisepsis is the process of applying a preparation to the surface of living tissue to prevent infections and inhibit the growth of microorganisms.

Antiseptics are preparations applied to living tissue to inhibit the growth and development of microorganisms and not necessarily kill them.

Ascarids are intestinal parasites transmitted primarily by exposure to feces containing microscopic eggs.

Asepsis is the freedom from infection.

Aseptic techniques are steps and procedures that prevent contact with microorganisms, such as proper preparation of surgical sites, equipment, instruments, and personnel.

B

Bacteria are one-celled microorganisms that contain no chlorophyll. They multiply by a simple division process and can be seen only by using a microscope.

Balance scale is a scale, similar to a bathroom scale, used to weigh small animals.

Barrow is a male pig castrated before reaching sexual maturity.

Bay is a horse color in which the body is brown and the tail and mane are black.

Billy is the nonpreferred name for a male goat.

Biopsy is the removal of a tissue sample for microscopic examination and diagnosis.

Bitch is a female dog.

Boar is a male guinea pig or pig.

Bovine is a formal term that describes or refers to cattle or any member of the bovid family including bison, buffalo, and their close relatives.

Branding is the process of applying a permanent mark on an animal's skin by burning the skin with a hot iron or freezing the skin with liquid nitrogen.

Brucellosis is caused by any one of several species of brucella organisms: *Brucella abortus* (cattle strain), *Brucella canis* (canine strain), *Brucella melitensis* (sheep strain), and *Brucella suis* (swine strain). It is transmitted from animal to animal and from animal to man by direct contact. Brucella organisms infect the reproductive tract and mammary glands of animals.

Buck is a male rat or rabbit. It is also a male sheep that can also be called a ram.

Buckskin is a horse color to describe animals with a yellowish brown coat and a black mane and tail. It is also the name of a distinct breed of horse that is this color.

Bull is a breeding male bovine.

C

Cage card is a temporary method of identification that lists the animal's name, owner's name, date admitted, and reason for admission on a card placed in a holder on the animal's cage.

Calf is a young bovine less than one year of age.

Calving is when a cow gives birth.

Campylobacteriosis, commonly known as vibriosis, is caused by the bacteria *Campylobacterjejuni*. It causes infected cattle and sheep to suffer from infertility and abortion. The infection is transmitted from animal to animal either by sexual or direct contact.

Canine is the formal term that describes or refers to a dog or other member of the Family Canidae.

Capillary action is the tendency of a liquid to flow in the direction of least resistance or according to the pull of gravity.

Caprine is a formal term that describes or refers to a goat.

Carbamates are insecticides that are stronger than pyrethrins but weaker than organophosphates and chlorinated hydrocarbons.

Carcinogenic describes a substance that can cause cancer.

Card files are either 5" x 8" or 10" X 16" cards that fold in half. It is a good system for veterinary practices that treat or see many animals only once a year for general procedures such as vaccinations, floating teeth, and heartworm testing.

Carnivores are flesh-eating animals that prey on other animals.

Castration is the removing of a male animal's reproductive organs.

Catheterization is the insertion of a sterile, plastic tube into the urethra to remove urine. It can be a method of collecting a urine sample.

Cat scratch fever is a human infection caused by a bite or scratch from healthy cats that have the bacterium *Rochalimaia henselae* in their mouths and on their claws. Human symptoms include inflammation and swelling around the wound, fever, headache, and malaise.

Centrifuge is a laboratory instrument designed to spin at a variety of speeds to separate solids from liquids, such as serum from a blood clot or urine sediment from the urine fluid.

Certificates of Veterinary Inspection, also called health papers, is documentation that must accompany livestock or poultry transported across state lines. A veterinarian, authorized by the state or USDA, completes the required tests and physical examinations for the state of destination before signing the certificate.

Chemical restraint is the use of drugs such as tranquilizers and anesthetic agents to produce a calmer, more approachable patient.

Chestnut is a reddish-brown color.

Chicks are young ratites, birds, or fowl.

Chlamydiosis, commonly known as parrot fever, is caused by the bacteria *Chlamydia psittaci*. It is primarily a disease of birds transmitted through feces, either by direct contact or inhalation of dried feces. Symptoms in birds include fever, diarrhea, anorexia, emaciation, and respiratory distress. Chlamydia can cause abortion in sheep and cattle, junctivitis in guinea pigs and conjunctivitus and penumonitis in cats. Human infections are rare and can be confused with common respiratory infections.

Chlorinated hydrocarbons are insecticidal chemicals that are rarely used because of their potential for toxicity and their adverse effects on the environment.

Cleaning is the process of removing dirt and organic matter such as feces, urine, and blood.

Clippers are equipment used frequently to remove hair from the skin during surgical preparation and in wound treatment.

Clutch is a group of eggs belonging to either reptiles or birds.

Coccidia is a common intestinal protozoa that infect specific hosts, including dogs, cats, livestock, and poultry.

Cocks are male birds.

Cold-blooded means that body temperature is not regulated internally but is equal to the temperature of the environment.

Colic is a life-threatening bloat, which can be caused by overfeeding horses with grains.

Colony is a group of mice, gerbils, or rats.

Colostrom is the first milk that comes from the mother.

Colt is a male horse less than two years of age.

Complaint is the reason for the call, the situation or symptom that has led to the need for advice.

Contact transmission is a method of disease transmission that includes direct contact, indirect contact, and droplet contact.

Controlled substances are drugs that have abuse potential and are regulated by the Drug Enforcement Administration.

Corrosive describes a caustic and locally destructive effect of a substance when it contacts with another substance.

Cow is an adult female bovine.

Cremation means to reduce a dead body to ashes.

Crias are newborn llamas and alpacas.

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Crossbreeds are the product of two animals both of which are different breeds.

Cross contamination is the passing of infectious organisms from one animal to another.

Culture medium is a substance in which microorganisms or cells can grow.

Culture is a laboratory test involving the cultivation of microorganisms or cells in a culture medium.

Culture/sensitivity is the laboratory process of examining body fluids, tissue, or excretion to identify which bacteria is causing an infection and which antibodies should be used.

Culturettes® are small, sterile swabs with attached reservoirs that contain special culture media that encourages bacteria to grow.

Cyanosis is a bluish discoloration of the skin and mucous membranes that is the result of blood not properly transporting oxygen.

Cystocentesis is a method of collecting urine specimens by tapping the bladder with a hypodermic needle through the abdominal wall.

Cytology is the study of cells.

D

Daily progress notes are records of daily observations by the staff that are considered significant in the patient's general health status and response to treatment.

Dam is a mule's mother.

Dead files are files of clients with inactive accounts that are removed from active files after a period of time.

Dehydration is a relative lack of fluid or water in the body's tissues either from a lack of water intake or disease processes that cause the body to lose water excessively, such as fever, vomiting, and diarrhea.

Dental prophylaxis is scaling the tartar off and polishing the teeth of dogs and cats that is usually done using a general anesthetic.

Dewlaps are the loose skin that hangs under the neck of an iguana.

Diagnostic procedures are done in order to recognize or diagnose a disease or parasite problem, to evaluate the severity of an injury, or to evaluate the injury's response to therapy.

Diet often refers to weight loss but is actually the natural food and water requirements of an animal.

Differential count is the counts of each type of white blood cell.

Digestion is the bodily process by which an animal breaks down the food it eats into basic substances that the body can use.

Dip is a solution that is diluted with water before being applied to an animals's skin and coat. Most dips are insecticides and chemical products intended to kill external parasites.

Direct contact is the method of disease transmission that occurs from contacting or touching an infected animal.

Disinfecting is the process of destroying microorganisms on living objects.

Doe is a female rat or rabbit.

Dorsal crest is the spines that go down the middle of an iguanas back from the neck to the base of the tail.

Dosimeters are monitoring devices (usually as lapel pins) worn by employees to detect if their exposure to levels of certain chemicals or radiation is acceptable.

Draft breeds are large horse breeds bred for heavy work.

Drape is a sterile covering used in an operating room that may be considered disposable or reusable.

Droplet contact is a method of disease transmission that occurs when the animal coughs, sneezes, or creates large droplet-sized particles.

Dry cow is a dairy cow that is not currently giving milk.

Dun is color of horse that has a yellowish brown coat with a black mane and tail. It is also the name of a distinct horse breed of animals that are this color.

E

Ear notching is an identification system in which an animal's ears are divided into quadrants and each quadrant is assigned a value. Notches are made in the outside edge of the ear and the values of the quadrants are added to identify the animal's number in a litter and the litter's number.

Ectoparasites are external parasites that include fleas, ticks, lice, mites, and many biting flies.

Ecdysis is the sloughing of the outer layer of skin, a necessary function of reptiles and amphibians that permits skin renewal as they grow.

Electrocardiograph machine measures the electrical activity of the heart by the attachment of electrodes to the patient in strategic locations.

Emergency is a situation or event of a serious nature which develops suddenly and unexpectedly, and demands immediate action; it is a potentially life-threatening situation.

Empathy is an intimate understanding of another person's feelings, thoughts, and motives, by putting oneself into the other person's position.

Encephalitis, commonly known as sleeping sickness, is a disease caused by five strains of *Trypanosoma* viruses. Humans can be infected by being bitten by the mosquito vector that has contacted an infected animal. The virus can cause fatal central nervous system infections in human beings and horses.

Endogenous means that the source of microorganisms necessary to cause infection originate from within the body of the animal.

Endoparasites are internal parasites, which include intestinal worms and blood parasites.

Endoscope is an instrument that allows the veterinarian to look at internal structures three-dimensionally.

Endotracheal tubes are semi-rigid plastic tubes that come in a variety of sizes. Used to deliver anesthetic gases directly into the lungs.

Equine refers to a horse or member of the horse family.

Ethics are morally correct thoughts, judgements, and actions.

Euthanize means to humanely put to death.

Ewe is a female sheep.

Exogenous means the source of microorganisms necessary to cause infection is environmental.

Exotic animals are animals that do not live and reproduce naturally in the geographic region in which they are being treated.

F

Farrow is the term for sows giving birth.

Fear biting is when dogs bite when frightened.

Fecal flotation is a laboratory procedure in which fecal material is mixed with a solution that is heavier than potential worm eggs in the feces causing them to float to the surface.

Fecal loop is a lubricated device inserted into the rectum of the patient.

Fecal specimens are samples of feces used to diagnosis intestinal parasites or other intestinal infections.

Feline is the formal term that describes or refers to a cat or other member of the Family Felidae.

Filly is a female horse less than two years of age.

Film cassettes are hinged cases into which radiograph film is placed to protect the film while the radiographs are being taken.

Flaxen is a pale, soft straw color.

Fleas are tiny, black or brown insects seen crawling deep in the coat of the infested animal.

Flight or fight response in which an animal that feels cornered may become aggressive and fight.

Fleece is an entire coat of wool while it is still on the sheep.

Flock is a group of sheep.

Fly strike is the term used to describe the irritation of the skin caused by biting flies.

Foal (noun) is the term for a young horse, regardless of gender; (verb) when a mare gives birth.

Fomites are inanimate objects or materials that an organism can survive on for six months, and three months in frozen carcasses.

Free catch is the most common method of collecting urine. Urine is collected while the animal is voiding normally, usually during a walk outside.

Freshen means to come into milk after giving birth.

Fungi are lower plants that lack chlorophyll, which includes molds, mildews, mushrooms, and yeast. Fungi can cause fungal diseases.

G

Gelding is a castrated male horse.

Gilt is a female pig before giving birth to her first litter.

H

Halter is a rope or strap put on the head of livestock or horses used to lead an animal.

Hands are units of measurement used to describe the height of a horse. One hand equals 4 inches.

Hatching is when a young reptile or bird breaks out of an egg.

Hazard Communication Coordinator (HCC) is the person responsible for recording and maintaining a list of all hazardous chemicals used within the workplace.

Hazard Communication Standard (HCS) is a set of guidelines, created by OSHA, that are designed to protect all employees in America from potential injury or illness caused by contact with chemicals in the workplace.

Hazardous chemicals are products that pose a danger to people or the environment.

Heartworms are internal parasites whose natural host is the dog. The heartworm is a blood parasite carried from animal to animal by the mosquito.

Heat-fixing is briefly heating a microscope slide from underneath with a flame.

Heifer is a female bovine before giving birth to her first calf.

Hematocrit tubes are tiny hollow glass tubes that are open at both ends.

Hemolysis is damage caused to red blood cells.

Hens are female ratites or birds.

Herbivores are animals that meet their nutritional needs by eating only plant materials.

Herd is a group of grazing animals.

Hobs are male ferrets.

Hookworms are tiny, hair-like, white or reddish colored intestinal parasites of dogs and cats, that are not easily visible to the naked eye.

Host is the organism that a parasite lives in or on.

Host-specific is a parasite that only affects certain hosts.

Hybrid is an animal whose parents are of different species, such as a mule.

Hyperthermia is a serious medical condition in which an animal can die from overheating.

I

Immune system is the body's natural system of protecting itself from invading microorganisms.

Immunization - See vaccination.

Incubation period is the time between the animal's contact with an infection and the appearance of disease symptoms.

Incubator is a device that provides an artificial means of controlling temperature, humidity, and ventilation during egg development.

Indirect contact is when transmission occurs from contact with items contaminated with a patient's organisms, such as contaminated needles, instruments, equipment, and surfaces.

Infant scale is a scale used to weigh small animal such as pocket pets and kittens.

Infectious diseases are diseases capable of being spread from one animal to another.

Infectious waste is waste that contains highly infectious pathogens in a sufficient quantity to cause an infectious disease in a human who is exposed to the waste.

Infestation is the presence of many external parasites on an individual animal.

Insecticides are chemicals in traditional flea products, such as sprays, powders, and dips.

Instinctual behavior is an animal's inherited tendency to respond reflexively to factors in their environment.

Instrument milk is a creamy solution diluted with distilled water used to lubricate and preserve metal surgical instruments after use and before cleaning.

Integumentary system is a body's system of skin; it is the largest system of the body.

Intermediate host is a second host organism that is required by some parasites in order to develop into the infectious stage.

Isolation means to separately house animals with certain infectious diseases from healthy animals.

J

Jack is a male donkey.

Jills are female ferrets.

K

Kid is a young goat.

Kidding is the term for goats giving birth.

Kindling is the term for rabbits giving birth.

Kit is a young rabbit.

Kits are young ferrets.

Kittens are young cats.

L

Laboratory animal is an animal used for research purposes.

Lactating or wet cow is a dairy cow that is milking.

Lamb or lambkin is a young sheep.

Lambing is the term for sheep giving birth.

Large or food animal practices prevent disease in cattle, pigs, sheep, goats, and poultry. Equine exclusive practices are large animal practices that only treat horses.

Leptospirosis is caused by many different *Leptospira* species and affects both domestic and wild animals. Infection is caused by exposure to water, soil, and foods contaminated with urine, and the infection enters man and animals, directly and indirectly, through the skin and the oral and nasal mucosa. Common symptoms are fever and anorexia, but the gastrointestinal tract and kidneys may also be affected.

Lice are tiny, flat-bodied, wingless insects, that are sometimes visible to the naked eye.

Life cycles are the series of events that allow parasites to reproduce themselves.

Light breeds are breeds of horses bred for ranch and cattle work, racing, and pleasure.

Litigation is to carry on a legal contest by judicial process.

Lunge line is a long, flat line that attaches to a halter used to exercise horses at a distance away from the handler.

M

Maggots are larvae or juvenile forms of flies deposited in open wounds.

Maintenance requirements are the minimum requirements that a diet should meet to allow the animal to maintain its body weight and condition in a certain stage of life.

Malnutrition is poor nutrition that results from feeding an insufficient amount, feeding a poorly balanced diet, or defective digestion or utilization of food.

Malpractice is professional misconduct or unreasonable lack of skill, such as acts of omission and acts of commission, and using inappropriate restraint resulting in injury to the animal or its owner.

Mange is the common term for an infestation of mites.

Manila folder files are basic manila files that contain information sheets regarding the patient or patients.

Mare is a female horse of breeding age.

Material Safety Data Sheets (MSDS) are forms that provide specific information about a particular hazardous chemical. Information includes dangers to an employee's health and treatments for accidental exposure.

Medical procedures are procedures that diagnose or treat specific conditions with medicine instead of surgery.

Medical record is a legal document containing information about the animal's life and health history.

Meniscus is the interface between the liquid and air that forms a fluid dome at the top of a tube.

Microchip identification is a permanent identification system in which a rice-grain sized microchip that can be read with a scanner is injected under the skin of an animal.

Microfilaria are the juveniles that adult female heartworms produce.

Microscope is a laboratory instrument usually equipped with four different lenses of different magnifications.

Mites are small, sometimes microscopic, spider-like arachnids that are external parasites which can survive on many hosts.

Mixed breed is an animal whose father and mother are different breeds or of mixed origin.

Mixed practices treat both small and large animals.

Molt is the regular shedding of the outer layer of skin of reptiles or feathers of birds.

Monogastric is a digestive system consisting of a one-compartment stomach used to digest food.

Mouth gags are metal tools equipped with a spring designed to hold the patient's mouth open while the veterinarian or veterinary technician works in the animal's mouth.

Muzzle is a device used to cover the mouth of an animal to prevent it from biting or eating.

Myiasis is an infestation of the skin by maggots.

N

Nanny or doe is a female goat. Doe is preferred. Doe is also a female rat and rabbit.

Neck band is a temporary method of identification for an animal admitted to the clinic.

Negligence is the failure to provide care with skill and good judgement.

Neutering is the term for removing an animal's reproductive organs.

Nonverbal communication includes communication techniques that involve body language, facial expressions, voice inflection and quality, and gestures.

Nose tong is a device placed in the nostrils of restrained cattle to apply firm pressure on each side of the septum to distract the animal.

Nose twitches are restraint devices made of a loop of chain, rope, or metal designed to be placed around a horse's top lip and tightened to distract the animal.

Nosocomial is the ability of infectious diseases to be acquired in a hospital.

NPO is a special feeding order that means no food or water.

Numerical filing is a filing system that can be as simple as keeping files in numerical order or in order of terminal digits.

Nutrition is the process of providing the animal with the proper combinations of foodstuffs to allow the animal to live, grow, and reproduce.

O

Omnivores are animals that eat both plant and animal materials.

Organophosphates are insecticides used in animal cleaning products that are very strong chemicals that can affect a mammal's nervous system in the same way they affect an insect's nervous system.

Out guides are a quick way to mark the place where a file belongs. It could be a piece of paper placed in the space where the file is missing, or file raised in front of the missing file.

Overo is a type of an American Paint Horse coat pattern that has irregular patches of white on any other base color. The legs are the same color as the base and makes them appear to be splashed with white from the belly up.

Ovine is a formal term to describe or refer to sheep.

P

Packed cell volume or hematocrit measures the percentage of blood that is made of blood cells versus the amount of chemicals and water.

Palomino is a color of a horse that is pale cream to golden with a flaxen or white mane. It is also a color breed registry for horses of different breeds that stand between 14-17 hands and have no more than 15 percent of a darker color hair mixed in their manes or tails.

Parasites are organisms (plant or animal) that depend on other living organisms for their survival. Parasites usually, but not always, cause harm to their host organism.

Parasitic diseases are diseases caused by parasites.

Pathogens are any microorganisms that can cause disease.

Photoperiod is the relative exposure of an organism to daylight as a proportion of the total day.

Physical restraint involves the handler's body as well as devices designed to exert direct or indirect control over certain body parts of the animals.

Piglet is a young pig.

Pipette is a plastic tube with a narrow tip at one end and a bulb at the other.

Plague is a flea-transmitted disease of rodents and rabbits caused by *Yersinia pestis*. Human symptoms include swollen, painful lymph nodes, fever, chills, headache, and exhaustion.

Plastron is the bottom shell of a turtle.

Platform scale is a scale used in small animal practices.

Pocket pets is a term used to describe small pets once only thought of as laboratory animals such as gerbils, hamsters, guinea pigs, mice, and rats.

Polled are livestock without horns.

Ponies are smaller versions of standard breeds and maintain the distinct body shape or form of the original breed of light horse.

Porcine is a formal term that describes or refers to a pig.

Portable scale is a large scale on wheels that can be pulled from farm to farm. These scales are used to weigh cattle, sheep, and swine.

Pour-on is a concentrated insecticide that is ladled onto the backs of cattle to control external parasites.

Preventative health care programs are programs designed by the veterinarian to help prevent disease and health problems in individual animals or herds of animals.

Prioritize means to rank tasks or concerns in order of importance or urgency.

Private practice is a practice in which the veterinarian's patients are client-owned animals.

Progress notes are records of daily observation by the staff which are considered significant to the patient's general health status and response to treatment.

Protozoa are intestinal or systemic parasites which may infect the intestinal tract or other organ systems of their hosts.

Pulse rate is the number of beats per minute that blood rhythmically expands and contracts through the arteries.

Pup is a young dog or rodent.

Purebred means to be bred from animals that are the same recognized breed.

Pyrethrins are the oldest and least toxic of the insecticides used in veterinary medicine.

Q

Quarantine is the isolation of an animal or animals suspected to have been exposed to an infectious disease for the duration of the potential disease's incubation period.

Queen is a female cat.

R

Rabies is a fatal disease of warm-blooded mammals only. The virus is shed in the saliva of infected animals.

Radioactive means to emit high energy particles that can damage living cells.

Radiograph developing tanks are deep sinks with three divisions, one for developer, one for a water rinse, and one for fixer.

Radiograph processor is a machine that develops the film taken by the radiograph unit.

Radiograph unit is the machine used to take radiographs or x-rays.

Ratites are large, flightless birds with small wings and flat breastbones that lack a keel or ridge.

Receptionist is the team member responsible for scheduling appointments and greeting clients and patients.

Refractometer is a small, hand-held instrument used in the laboratory to measure urine specific gravity and total protein levels in blood serum.

Reportable means that a veterinarian is required to report the disease to state or federal regulatory agencies.

Reptiles are cold-blooded and vertebrate animals, covered with scales or horny plates.

Requisition forms are completed when a specimen is sent to an outside laboratory.

Restraint is the process of keeping an animal in control while performing necessary procedures.

Restraint pole is a noose-like collar at the end of a long extension pole used to catch very aggressive animals without getting close enough to be bitten.

Ringworm is caused by several species of fungi called *dermatophytes*. Cats, dogs, cattle, and rodents are the most common sources of infection and may or may not show obvious lesions. It is transmitted by direct contact with infected animals or contaminated fomites such as grooming tools or halters.

Roan is a base color of red, brown, or black that is muted or lightened with a mixture of white hairs.

Roosters an adult male fowl or other various birds.

Roundworms are ascarids in dogs and cats, which are intestinal parasites transmitted primarily by exposure to feces containing the microscopic eggs.

Ruminants are even-toed hoofed animals that chew cuds and have complex four-chambered stomachs that convert roughage to meat, milk, and by-products.

S

Salmonellosis can be caused by any one of more than 2,000 different species of *Salmonella*. It has a broad range of animal hosts, both domestic and wild, and include mammals, birds, and reptiles. Infections may cause a diarrhea of varying degrees. Infection is transmitted to humans and animals by food contaminated with feces.

Scabies is caused by the sarcoptic mange mite. The mite burrows in the skin causing intense itching with subsequent hair loss and inflammation of the skin in both animals and humans.

Screening means to systematically sort through the information provided by callers in order of seriousness of complaints.

Scruff is the back of an animal's neck.

Serum samples are blood samples collected into red-topped or “clot” tubes.

Shoat is a young pig less than a year old and weighing between 60 to 160 pounds.

Sharps include hypodermic needles, scalpel blades, and broken glass.

Sire is the male parent of an animal.

Skin scrapings are specimens collected from the skin by scraping its surface with a scalpel blade.

Small animal practices treat only companion animals such as dogs and cats.

Snares are cables or rope nooses that are placed around the top half of a pig's snout and pushed to the back of its mouth to restrain the animal.

Sorrel is a red color that is lighter than chestnut.

Sow is an adult female pig or guinea pig.

Spaying is the removal of a female animal's reproductive organs.

Specialty practices treat particular species such as avian, wildlife, exotic, or a particular body system such as the heart, skin, or eyes. The AVMA recognizes 20 medical specialities in veterinary medicine.

Specimen is a representative sample of any material which can be used to diagnose disease or parasitism.

Strongyles are parasitic roundworms of horse, cattle, sheep, and swine.

Squeeze chute immobilizes the bull or cow while it is being treated. The animal's head is held in the headgate at the end of the chute.

Stag is a male animal castrated after maturity.

Stallion is a male horse of breeding age.

Starvation is extreme malnutrition and can result in death from prolonged lack of adequate nutrition.

Steer is a male bovine castrated before reaching sexual maturity.

Sterilizing is the process of destroying all forms of life. Sterilization begins with cleaning and is then accomplished with heat and chemicals.

Stud is a male dog or horse capable of breeding.

Surface disinfectants are applied to inanimate objects such as counters, cages, examination tables, bathtubs, or other equipment that cannot be sterilized to reduce the number of microorganisms.

Surgical areas may include the treatment room or preparation area, operating room, and recovery area.

Surgical instruments are used for fine surgical procedures. Common examples include scissors, clamps, scalpels, and forceps.

Surgical packs are groups of instruments that are commonly wrapped together.

Surgical procedures involve the manual manipulation of internal or external tissues with surgical instruments.

T

Tail restraint is a method of distraction which involves standing off to the side of the animal, placing both hands close to the base of the tail, and raising the tail over the animal's back with firm pressure.

Tapeworms are intestinal parasites that vary in length depending upon the species of the worm.

Tattooing is the process of inserting pigment under the skin to leave a permanent identifying mark on an animal.

Temperate species is a category of snakes that requires an environmental temperature of 73.4 degrees to 82.4 degrees Fahrenheit.

Terminal digit filing is a numerical filing method in which files are grouped according to the last three digits of a larger number.

Therapeutic diets are diets formulated specifically for treatment or prevention of specific problems related to the animal's diet.

Therapeutic procedures are procedures that involve therapy or treatment for specific diseases or other physical or behavioral abnormalities.

Tobiano is a type of American Paint Horse coat pattern that has white across the top line extending downward in a clearly marked pattern, usually with white legs.

Tom is a male cat.

Tovero is a type of American Paint Horse coat pattern that has characteristics of both the overo and tobiano coat patterns. The base color may be black, bay, brown, chestnut, sorrel, gray, or roan.

Toxocariasis is a disease generally seen in young children caused by the larvae of *Toxocara canis* and *Toxocara cati* (roundworms in the dog and cat). Dogs and cats shed the eggs of this parasite in their feces which are a source for human infection. Human symptoms are skin rashes, respiratory symptoms, and liver and eye problems.

Toxoplasmosis is a disease caused by a protozoal parasite called *Taxoplasma gondii*. Domestic and wild felines are the usual reservoirs; they become infected by eating raw meat, birds, or mice and then shed the organism in their feces.

Tropical species is a category of snakes that requires an environmental temperature of 78.8 degrees to 86 degrees Fahrenheit.

Tuberculosis is an infectious disease caused by the bacterium *Mycobacterium* that has three types: human, bovine, and avian. Tuberculosis is usually a chronic, debilitating disease but may also be acute and rapidly progressive. General symptoms include weakness, poor appetite, weight loss, low-grade fever, and respiratory distress with a hacking cough.

Tularemia, also known as rabbit fever, is caused by a bacterial septicemia (blood poisoning) caused by *Francisella tularensis*. It is primarily a disease of wild rodents and rabbits but is also seen in domestic sheep. Tularemia can be transmitted by direct contact with infected carcasses, inhalation of organism, or via blood-sucking insect.

U

Ultrasonic cleaning is an alternative to manual precleaning and lessens the risk of being cut by sharp, contaminated instruments. After presoaking, instruments are placed in a basket, immersed into a special disinfectant solution, and subjected to sound waves for five minutes before being rinsed thoroughly and patted dry.

Ultrasonic dental scaler is a machine that cleans and polishes teeth with a combination of a vibrating metal tip and water mist.

Undulant fever is brucellosis in humans, and it is a chronic condition characterized by waves of fever with chills and sweating episodes, general weakness, and weight loss.

Urgency defines a situation as demanding immediate attention.

Urinalysis is a laboratory test performed at the clinic to screen for urinary tract infections.

Urine chemistries measure the pH, blood, protein, bilirubin, sugar, etc. using Multistix or similar test strips.

Urine sediment exam is the examination of the solids that settle to the bottom of the test tube after the urine is centrifuged and the fluid portion is poured off.

Urine specific gravity measures the relative amount of solids (cells, blood, crystals, bacteria) in the urine as compared to liquid using a refractometer.

Urine specimens are used to diagnose urinary tract infections.

V

Vaccination is the injection of animals with vaccines developed to produce immunity to specific diseases.

Vaporizer is the most important functional unit of the anesthetic gas machine. They are specific to different types of inhalant gases and hold the actual anesthetic in liquid form.

Vectors are carriers, often a tick or mosquito, that transfers infective agents from one host to another.

Venipuncture is the collection of blood samples using a hypodermic needle.

Verbal communication is the use of actual words written or spoken to transmit information.

Veterinarians are highly trained individuals who have received a graduate degree (D.V.M.) after completing four years of veterinary school and whose primary goal is the prevention, diagnosis, treatment, and study of animal diseases.

Veterinary medicine is the diagnosis, treatment, and prevention of disease and injury in animals. It also includes prescribing and administering drugs, biologic agents (vaccines), anesthetic agents, and medical and surgical techniques.

Veterinary team is a team consisting of the veterinarian, veterinary technician, office manager, receptionist, and animal care assistants, who work together to provide quality care and service to animals and their owners.

Veterinary technician graduate from a two- to three- year program in veterinary technology to assist in the practice of veterinary medicine under the direction and supervision of the veterinarian.

Viruses can be either very simple microorganisms or a very complex molecules that can grow and multiply only in living cells.

Voided samples are urine samples caught in a clean container intended for liquid samples as the animal urinates on its own.

W

Warm-blooded means that the body temperature is constant despite changes in environmental temperature.

Wattles are approximately 3-inch appendages covered with skin and hair that hang from a goat's neck.

Weanlings are horses from 6 to 12 month of age.

Weight measurement tape is marked in pounds and provides a means of accurately estimating the weight of large animals.

Wether is a castrated male goat or sheep.

Whipworms are parasites of dogs that inhabit the large intestine.

Whole blood samples are collected to evaluate patients for infections and anemia.

Withers is the high point or top of the shoulders of a horse.

Y

Yearlings are horses from 1 to 2 years of age.

Z

Zoonosis or zoonotic disease is a communicable or contagious disease which can be transmitted from vertebrate animals to man.

Unit I

Introduction to Veterinary Medicine

Unit I introduces different types of veterinary practices and career opportunities and describes the roles, responsibilities, and educational requirements of various members of the veterinary team. This unit describes the preferred personal and professional qualities of an animal care assistant. You will also learn the importance of ethics and about regulations that affect veterinary practices.

Unit Lessons

The Animal Care Assistant

Ethics and Public Relations

Regulations

Lesson 1:
The Animal Care Assistant

Objectives:

A. Identify the purpose of veterinary medicine.

B. Match roles and responsibilities of each member of the veterinary team.

C. Differentiate the educational and licensure requirements for various positions.

D. Identify career opportunities in the veterinary field.

E. Identify types of veterinary practices.

F. Exhibit the personal professional characteristics of an animal care assistant and maintain professional work habits.

G. Dress as a professional animal care assistant.

Key Terms:

- Veterinary medicine
- Veterinary team
- Veterinarian
- Veterinary technicians
- Animal care assistants
- Office manager
- Receptionist
- Private practice
- Small animal practice
- Large animal or food animal practice
- Mixed practice
- Specialty practices

Veterinary Medicine

Veterinary medicine is the diagnosis, treatment, and prevention of disease and injury in animals. Veterinary medicine includes prescribing and administering drugs, biologic agents (vaccines), anesthetic agents, and medical and surgical procedures.

Members of the Veterinary Team

The **veterinary team** generally consists of the veterinarian, veterinary technician, receptionist, animal care assistants, kennel workers, etc. A "team" works together to achieve a common goal. Not every veterinary practice will have all of the team members discussed in this lesson. In veterinary medicine, the goal is to provide quality care and service for both the patient (animal) and the client (animal owner).

A **veterinarian** is someone trained in the science of animal medicine. Veterinarians are highly trained individuals whose primary goal is the prevention, diagnosis, treatment, and study of animal diseases. The veterinarian alone is responsible for diagnosing disease, prescribing medication, and performing surgery on patients. A veterinarian attends college for an average of six to eight years. Veterinarians receive a graduate degree (D.V.M.) after completing four years of veterinary school. Veterinarians must pass both state and national board exams in order to obtain state licensure.

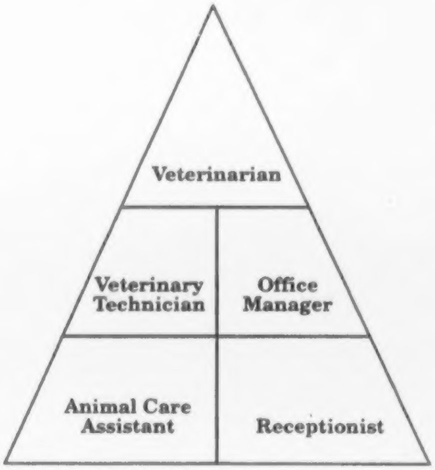
Veterinary technicians are relatively new members to the veterinary team. They graduate from a two- to three-year program in veterinary technology. These programs are accredited by the American Veterinary Medical Association (AVMA) and have only been available in the last 20-25 years. Registered, certified, or licensed technicians must take national and state board exams. Technicians assist in the practice of veterinary medicine under the direction and supervision of the veterinarian. They may supervise animal care assistants and other members of the veterinary team.

Animal care assistants, kennel workers, and caretakers are job titles for individuals with less education and training than veterinary technicians. The basic tasks outlined by AVMA policy for these workers include feeding, watering, bathing, restraining, moving and exercising animals, cleaning, clerical or office duties, and other similar entry-level activities. Animal care assistants may have attended a vocational program or received on-the-job training. The responsibilities of the animal care assistant will vary from one practice to another. Animal care assistants should only do what they have been trained to do, and only after being told to do so. For the animal care assistant, the veterinary field offers entry-level employment opportunities in veterinary offices or clinics, animal hospitals, and kennels.

The **office manager** is an employee paid to manage the business affairs of the veterinary practice. In larger practices, this may be a position for an individual other than the veterinarian and other support staff. In smaller practices, the veterinarian may be the manager, or he or she may assign the senior receptionist or technician some or all of the management responsibilities. An office manager's responsibilities may include hiring and firing, employee evaluations, payroll, ordering supplies, paying the practice's bills, handling advertising, client account management, and complaints.

The **receptionist** is the team member who schedules appointments and greets clients and their animals. Receptionists are responsible for answering the telephone. This is one of their most important responsibilities because it is often the first contact a client has with the office. Receptionists usually receive training on the job and often have years of experience working with people.

Regardless of the organization of a clinic, there is a definite order of responsibility in all veterinary facilities. The veterinarian is ultimately responsible for every patient presented to the clinic, but he or she depends on the veterinary staff to help provide excellent service. The following is a chain of command for a veterinary practice:



On the left side of the triangle are the employees whose primary focus is medical care. On the right side of the triangle are the employees who focus on business matters, file management, inventory management, and keeping order in the clinic. Each of these employees is a critical component of the veterinary practice. They must all cooperate for the clinic to run smoothly and efficiently. Some practices have all of the positions described above, others may have only the veterinarian, a receptionist, and one of the levels of assistants to the veterinarian. In a small clinic, the animal care assistant may answer directly to the veterinarian and assist the receptionist with phone and file management. In heavily staffed clinics, the animal care assistant answers to the veterinary technician, who answers to the veterinarian. These types of clinics may have little interaction between the two sides of the triangle except at the top.

Opportunities in the Veterinary Field

In 1996, the AVMA reported a membership of 58,000 veterinarians, an estimated 83 percent of the veterinarians in the United States. The fields of employment for veterinarians include private practice (small animal, large animal, mixed, and specialty), research, state or federal government, education, and humane organizations.

Private practice is a practice in which the veterinarian's patients are client-owned animals. The many different types of private practices are discussed in the next section.

The purpose of veterinary research is to obtain information about physiology or disease to improve life for animals and humans. Research includes developing new drugs, products, and feeds. Universities and colleges primarily conduct public research, while pharmaceutical or agricultural companies do much of the research in private industry.

Federal and state government offer several positions for veterinarians. Veterinarians in regulatory positions have authority over several programs to prevent animal disease. In inspection positions, veterinarians inspect the quality of seafood, dairy products, poultry, and meat for human consumption. Veterinarians in the military are involved in research, laboratory animal medicine, communicable disease management, and also treatment of animals belonging to military personnel.

Educating the public in their area of expertise is the goal of veterinarians employed as extension specialists. Veterinarians in university and college teaching positions are responsible for educating future veterinarians, veterinary technicians, and veterinarians in residency and graduate programs. Most of these veterinarians have completed specialty residencies and have master's or doctorate degrees. They also must pass qualifying and/or certifying board exams.

Types of Veterinary Practices

During a typical day, a veterinarian in private practice prevents, diagnoses, and treats diseases and injuries, performs surgery, and responds to emergencies. Educating the client is an important aspect of private practice because it affects the health and well-being of both client and patient. Private practice clinics use several different scheduling systems including appointment (prearranged time), walk-in (patients seen as they arrive), or combinations of these two.

Small animal practice veterinarians see companion animals such as dogs and cats. Some small animal practices only see emergency cases. Emergency practices are routinely open when other practices are closed such as weekends, nights, and holidays.

In **large animal** or **food animal practice**, much of the veterinarian's work is done on the client's farm or ranch. These veterinarians work to prevent disease in cattle, swine, sheep, goats, and poultry. Equine exclusive practices treat only horses, ponies, mules, and donkeys.

Veterinarians treating both small and large animals have a **mixed practice**. These practices provide opportunities for the veterinarian to treat many different species in both clinical and farm settings.

Specialty practices treat particular species (avian, wildlife, exotic, etc.) or a particular body system such as the heart, skin, or eyes. The AVMA recognizes 20 veterinary medicine specialties. Equine practice could be considered both a large animal and a specialty type practice.

Professional Characteristics of the Animal Care Assistant

Veterinary professionals interact daily with many people in all types of settings. The animal care assistant should also learn to work and communicate with all types of people. Possessing the following qualities is important.

- *Ethical* - The animal care assistant must be trusted not to breach client confidentiality and not to practice medicine. Lesson 2 of this unit discusses ethical behavior in detail.
- *Dependable* - The animal care assistant should be reliable, trustworthy, and responsible. Clients and coworkers alike expect the animal care assistant to be on time for work and to finish projects quickly.
- *Empathetic* - All members of the veterinary team should try to identify and understand other people's situations and feelings. Empathy is different from sympathy. Sympathy means feeling sorry for the client and patient. Empathy is to understand another's feelings, thoughts, and experiences; to put yourself in that person's position. When clients and their animals visit the office, they may be in pain or under a great amount of stress. Empathy can help the assistant work more effectively with both the animal and its owner. This topic is also discussed in Unit II, Lesson 1.
- *Enthusiastic* - Great excitement or interest in a subject or cause can excite and make others positive. Clients are more comfortable in a strange place when the office personnel are enthusiastic and friendly. The assistant should complete projects or other assignments with excitement.
- *Motivated* - The animal care assistant should complete tasks without prompting or a great deal of supervision. For example, the veterinarian or the veterinary technician should not need to repeat instructions or requests for the assistant to complete routine tasks.
- *Tactful* - Acute awareness of appropriate statements is essential for the assistant when dealing with others. It is likely that the animal care assistant will be involved in sensitive situations that require polite or diplomatic behavior. For instance, an inappropriate statement to a client may be, "Wow! Why is your dog so fat?"
- *Tidy* - There will be many instances in the veterinary office when the assistant must clean up spills or animal accidents, or even dead or mutilated animals. Some animal care assistants may have the regular task of cleaning animal compartments or cleaning certain areas of the office.

> Being efficient and handling these tasks with a professional attitude is important for the assistant. A sanitary office will contribute to the good health of all animals visiting the office and relate to clients that the veterinary staff cares about maintaining a clean environment.

The animal care assistant works not only with people on a daily basis. As the job title indicates, they work with and care for animals throughout the day. Therefore, the most important quality the animal care assistant should possess is a love for all animals. The assistant can express his or her love for animals by giving them appropriate care and attention.

Professional Dress and Appearance of the Animal Care Assistant

First impressions are very important. You must be concerned with the impression you make on clients and on your employer. Everyone in the practice provides service to the client. This service contributes to the reputation of the practice. To make a good first impression, be courteous, have a caring attitude, and present yourself professionally. As a health care occupation, veterinary medicine tends to be a conservative working environment. While this may not be true of every practice, you should be aware of the appearance and attitudes of the people with whom you will be working. The veterinarian may believe that fashion trends such as body piercing or tattooing will reflect poorly on the clinic's image. Always consider your appearance with your employability.

A professional manner includes dressing appropriately in clean clothes and using good personal grooming habits. Personal grooming should begin with a shower or bath each day before coming to work. Having clean, well-groomed hair is important. Makeup should be worn only in moderation. Limit jewelry worn at the clinic because it is a potential site for germs to collect and may also be hazardous. Jewelry may become caught on cages, scratch patients, or be pulled on by the animals. Fingernails should be trimmed and kept short and clean. Germs may collect in nail polish and underneath long nails.

The type of activity assigned to the assistant will determine the appropriate clothing and footwear to be worn. Some practices give their employees lab coats or uniforms. Open-toed shoes and sandals are not appropriate footwear because of possible disease transmission or injury. Wearing well-constructed shoes or boots provides extra protection when working with food animals or horses. Many clinics have a dress code or policy to which the animal care assistant will be expected to adhere.

Test Your Knowledge: Complete the following activity sheet to test your knowledge and understanding of the materials you have studied in this lesson.

Lesson 1: The Animal Care Assistant

Activity Sheet

1. What is the purpose of veterinary medicine?

   ____

   ____

   ____

   ____

2. List the potential members of the veterinary team with a brief description of responsibilities for each one.

   a. ____

   b. ____

   c. ____

   d. ____

   e. ____

3. List the educational and licensure requirements for the following positions:

   Veterinarian:

   Veterinary Technician:

   Animal Care Assistant:

4. List four career opportunities in the veterinary field.

   a. ____

   b. ____

   c. ____

   d. ____

5. List three types of veterinary practices.

a. ______

b. ______

c. ______

6. List four personal characteristics of the professional animal care assistant.

a. ______

b. ______

c. ______

d. ______

7. List the three steps to making a good impression described in this lesson.

a. ______

b. ______

c. ______

8. Describe four aspects of professional dress and appearance.

a. ______

b. ______

c. ______

d. ______

9. List two reasons why wearing sandals and open-toed shoes are not appropriate while working with animals.

a. ______

b. ______

Clinical/Laboratory Activities

1. Ask the veterinarian or office manager to identify the staff positions and chain of command for the clinic where you are working. Find out what your responsibilities will be at the clinic and who is your immediate supervisor.

2. Research at the library or on the Internet for information on veterinary careers. Write a brief report about your interest in working in this field and your future career goals including required education.

3. Find out what clothes and shoes are appropriate and not appropriate to wear while working at the clinic.

Lesson 2:
Ethics and Public Relations

Objectives:

A. Describe ethics and how it affects the standards of behavior for the veterinary team.

B. Identify "dos" and "don'ts" to promote client satisfaction and avoid liability.

C. Maintain confidentiality.

Key Terms:

- Ethics
- Negligence
- Malpractice
- Acts of omission
- Acts of commission
- Litigation

Ethics

Ethics are morally correct thoughts, judgments, and actions. Everyone has personal ethical standards that are reflected in his or her actions, decisions, and values. Being ethical includes protecting client trust and confidence and using moral conduct and judgment.

Veterinarians and veterinary team members are governed by both professional and personal codes of ethics. Ethics are voluntary controls, not laws, that serve as a method of "self-policing" within the profession. A code of ethics serves three main functions: to communicate the ideals of the profession, to serve as a general guide for standards of professional and acceptable conduct, and to provide disciplinary procedures for those who fall below the standards. A strict code of ethics is not only essential, it is mandatory.

The American Veterinary Medical Association Principles of Ethics has been set forth as a guide to its members. It is the foundation for individual and collective efforts in veterinary medicine. Every member of the veterinary team should be aware of the AVMA Principles of Ethics and should apply the guidelines that relate to their activities. Listed below are highlights of the AVMA Principles of Ethics.

Guidelines for Ethical and Professional Behavior

Ethical Actions:

- Speak and act with honesty and fairness.
- Consider the patient's welfare first.
- Respect the rights of clients, colleagues, and other health professionals.
- Seek the respect of colleagues, clients, and the public.
- Choose whom you serve and never neglect the patient.
- Never advertise false, misleading, or deceptive information.
- Safeguard the public from unethical veterinarians.
- Never render services under conditions that compromise free exercise of judgment or skill.
- Participate in community activities and organizations.

- Veterinarians should continually strive to improve their knowledge and skills.

Unethical Actions:

- Placing personal gain (monetary, privileges, etc.) over the welfare of the patient.
- Degrading other veterinarians' work or treatment plans.
- Promising "miraculous" results or cures.
- Not using accepted, current veterinary medical knowledge to treat patients.
- Operating to conceal genetic defects.
- Discussing patients and clients outside the workplace.
- Being impaired by the use of alcohol or illegal drugs while serving in a professional capacity.
- Bringing harm to others.
- Causing illegal actions.

In addition to ethical and unethical actions, the veterinary team must be aware of legal and illegal actions. Illegal actions are punishable by law and can hurt an individual personally and professionally. These actions can result in the suspension or revocation of a veterinarian's or veterinary technician's certification or license, a fine, or imprisonment for any member of the veterinary team.

Illegal Actions:

- Not renewing the required license or certification.
- Using or being addicted to non-prescribed or illegal drugs, especially those accessible through the veterinary clinic.
- Breaking any laws.
- Causing injury to a patient or client because of **negligence** (failure to provide care with skill and good judgement).
- Not complying with the legal limitations of your profession.

Maintaining Client Satisfaction

Malpractice is professional misconduct or unreasonable lack of skill, such as **acts of omission** and **acts of commission**, and using inappropriate restraint resulting in injury to the animal or its owner. An example of an act of omission would be failing to do adequate diagnostic tests. An example of an act of commission would be amputating the wrong leg. Every veterinary practice should have professional liability insurance that covers malpractice. Clients bring forth most **litigation** (to carry on a legal contest by judicial process) because their expectations have not been met. Often clients have unrealistic expectations. The veterinary team should try to avoid this problem. The following guidelines will help to achieve client satisfaction and protect the clinic legally. Many guidelines listed below are directed to the veterinarian or veterinary technician. The animal care assistant should be familiar with all the guidelines and follow those involving his or her responsibilities.

Dos

- Advise the client of the risks of a procedure or treatment.

- Secure the owner's written consent before doing surgery, making marked changes in treatment, or performing euthanasia.
- Maintain complete and accurate records of animals in your care or custody.
- Postpone treatment until the proper equipment is available.
- Label all dispensed products.
- Show concern for owner and patient.
- Be familiar with laws regarding disposal of abandoned animals.

Don'ts

- Make a statement the client can interpret as a guarantee of good results.
- Have the owner help with treatments requiring extreme measures.
- Perform a treatment or procedure without proper training or qualifications.
- Make an intentionally misleading or false statement in a medical record.

Maintain Confidentiality

Being ethical includes maintaining confidentiality. In providing a service to the public, animal care assistants have access to information that they must hold in the strictest confidence. A good rule to remember is, "What you see here, what you hear here, what you do here, stops here when you leave here."

Avoiding a breach of confidentiality seems easy. The animal care assistant should NEVER talk with family or friends about client or patient information. The animal care assistant must also not speak of financial records he or she may see during the workday.

Test Your Knowledge: Complete the following activity sheet to test your knowledge and understanding of the materials you have studied in this lesson.

Lesson 2: Ethics and Public Relations

Activity Sheet

1. Define ethics.

____

____

____

2. List four ethical actions from the AVMA's Principles of Ethics Behavior that apply to all members of the veterinary team.

   a. ______________________________

   b. ______________________________

   c. ______________________________

   d. ______________________________

3. List three unethical actions according to the AVMA's guidelines for ethical and professional behavior.

   a. ______________________________

   b. ______________________________

   c. ______________________________

4. List three actions that would be considered illegal in the veterinary clinic.

   a. ______________________________

   b. ______________________________

   c. ______________________________

5. Would the personal use of non-prescribed, controlled substances be considered an unethical action or an illegal action?

____

6. List two actions you should do to maintain client satisfaction.

   a. ____________________

   b. ____________________

7. List two actions you should not do to maintain client satisfaction.

   a. ____________________

   b. ____________________

8. What does maintain confidentiality mean in veterinary medicine?

   ____

   ____

   ____

Clinical/Laboratory Activities

1. Discuss the following clinical situations with a classroom group:

   a. After cleaning several animal compartments and then going on to your next task you remember that one compartment still needs to be cleaned. The veterinarian asks, if you have finished cleaning the compartments. How should you respond?

   b. While stacking supplies, you find damaged inventory or you accidentally damaged some supplies. What should you do?

   c. While preparing unmarked specimens for laboratory tests, you lose track of which specimen is which. What should you do?

   d. The veterinarian asks you to administer a patient's medication which you have been trained to do. You mistakenly give the medication to the wrong animal. What should you do?

2. Discuss what could happen if you were helping yourself to medications or supplies without authorization?

3. In the classroom, either role play or discuss the following situation. A client carrying a pet in a cardboard box is leaving the clinic and passes another client entering the clinic. The arriving client asks you what happened to the animal. What should you say?

Lesson 3:
Regulations

Objectives:

A. Recognize how local, state, and federal regulations affect veterinary practice.

B. Identify regulations for disposing of medical waste.

C. Identify controlled substance legislation pertinent to veterinary practice.

D. Identify ramifications and implications of the Animal Welfare Act.

E. Recognize wildlife regulations and codes relevant to veterinary practice.

Key Terms:

- Veterinary Medical Practice Act
- Board of Veterinary Medical Examiners
- Occupational Safety and Health Act
- Infectious waste
- Occupational Safety and Health Administration (OSHA)
- Material Safety Data Sheet (MSDS)
- Drug Enforcement Administration (DEA)
- Controlled substance
- Animal Welfare Act
- United States Department of Agriculture (USDA)
- Animal and Plant Health Inspection Service (APHIS)
- Certificate of Veterinary Inspection
- American Association for the Accreditation of Laboratory Animal Care (AAALAC)
- American Association for Laboratory Animal Science (AALAS)

Regulations

Many federal and state agencies regulate veterinary medicine. It is the responsibility of the veterinarian and the veterinary team to be familiar with regulations that apply to them. This lesson is limited to general regulations that apply to all veterinary medicine.

Local Regulation

City and county regulations vary from community to community. Common animal regulations include public nuisance and leash laws. Communities may prohibit residents from keeping some animals, such as livestock in residential areas, and some exotic pets. Many communities protect animals from cruelty and neglect with humane treatment regulations. A county or city department of health may regulate the sanitation of animal compartments or clinics. City regulations usually require dogs to be licensed and vaccinated and the owner must maintain a record of vaccinations. A set frequency of rabies vaccinations is usually required for pets by the city or county.

State Regulation

Each state has a **Veterinary Medical Practice Act** that serves to protect its citizens. Veterinarians must meet certain standards and obtain a state license to practice. Provisions in the act allow the governor to appoint veterinarians and non-veterinarians to serve on the **Board of Veterinary Medical Examiners**. The primary responsibility of the board is to grant licenses. Other provisions of this act include definitions, powers of the board, education requirements for veterinarians and technicians, disciplinary actions, licensing of veterinary technicians, and levels of supervision required for veterinarians and technicians.

The Department of Natural Resources (DNR) and the Department of Health (DOH) are responsible for regulating infectious waste management. **Infectious waste** is waste that contains highly infectious pathogens in a sufficient quantity to cause an infectious disease in a human who is exposed to the waste. Infectious or medical wastes need to be disposed of properly to prevent any harmful effects. (Unit V, Lesson 1)

Federal Regulation

In 1970 the **Occupational Safety and Health Act** established the **Occupational Safety and Health Administration (OSHA)**. The purpose of this act is to assure safe and healthy working conditions for every employee in the United States. All veterinary practices must post the Job Safety and Health Protection Notice for all employees. Failure to do so can result in fines. An individual in each practice must be designated as the Hazard Communication Coordinator (HCC). This person is responsible for communicating hazards to employees and maintaining a written plan.

The written hazard communication plan must include an introduction to hazard communication, list of hazardous chemicals used in the practice, file of **Material Safety Data Sheets (MSDS)**, instructions on labels and warnings, and an employee guide. MSDS are forms that provide specific information about a particular hazardous chemical. Information includes dangers to an employee's health and treatments for accidental exposure. (Unit V, Lesson 1)

The **Drug Enforcement Administration (DEA)** is the federal law enforcement agency responsible for regulating access of controlled substances through legal channels of distribution. A **controlled substance** is a drug that has abuse potential. The purpose of the DEA is to effectively control narcotic and dangerous drug abuse through enforcement and prevention. Laws exist specifically for the manufacturing, distributing, and dispensing of controlled substances.

Each veterinarian must register with the DEA to administer, prescribe, or dispense a controlled substance. Administer means to instill a drug into the body of a patient. Prescribe means to issue a prescription for medication for a patient. Dispense means to deliver a controlled substance in some type of bottle, box, or other container to the patient. Veterinarians must renew DEA registration every three years.

Controlled substances stored in an office or clinic must be locked securely in a well-constructed cabinet or safe. Records must be kept of all controlled substances purchased, distributed, and dispensed. If theft or significant loss occurs, the veterinarian must notify the DEA office and local law enforcement officials.

The **Animal Welfare Act** of 1966 authorized the **United States Department of Agriculture (USDA)** and a branch of the USDA, the **Animal and Plant Health Inspection Service (APHIS)** to regulate animals transported in commerce, used for nonagricultural research and exhibition, and sold as pets at the wholesale level. The U.S. Secretary of Agriculture sets the standards that govern the humane handling, housing, care, treatment, and transportation of certain warm-blooded animals. These animals include dogs, cats, monkeys, guinea pigs, hamsters, rabbits, and other warm-blooded animals in zoos, circuses, marine animal shows, and exhibits. The act requires individuals and businesses to be licensed and registered with APHIS. Individuals and businesses must provide animals in their care with adequate food, water, housing, sanitation, ventilation, and veterinary care. They must also handle and transport animals properly.

The USDA-APHIS also sets guidelines for interstate movement and health standards of livestock and poultry. States must meet or exceed these guidelines. Each state has a regulatory office or agency that works with veterinarians and producers. Livestock or poultry transported across state lines must meet requirements set by the state of destination. For example, Missouri cattle being transported to Ohio must meet the requirements set by the state of Ohio. A **Certificate of Veterinary Inspection**, also called health papers, must accompany these animals. A private veterinarian, who is authorized by the state or USDA, must complete the tests and physical examinations required by the state of destination before signing the certificate.

The **American Association for the Accreditation of Laboratory Animal Care (AAALAC)** accredits research programs that use laboratory animals. The **American Association for Laboratory Animal Science (AALAS)** certifies technicians working in laboratory facilities. AALAS is concerned with the production, care, and study of laboratory animals.

Wildlife Regulations

Federal and state agencies cooperate in the management of wildlife. The federal government has ultimate jurisdiction over wildlife regulation. Facilities that provide care and attempt to rehabilitate wildlife must have a permit to do so. Ideally, permits should be obtained prior to possession of the protected species. Contact the Department of Conservation with any questions regarding transportation, care, and rehabilitation of wild animals.

Test Your Knowledge: Complete the following activity sheet to test your knowledge and understanding of the materials you have studied in this lesson.

After you have completed the activity sheets, you may take the written evaluation for this unit. A score of at least 80 percent indicates you may proceed to the next unit.

Lesson 3: Regulations

Activity Sheet

1. List two examples of local regulations that involve the clinic where you are working.

   1. ______________________________

   2. ______________________________

2. What entity grants a state license to practice veterinary medicine?

   ____

3. List two state agencies responsible for governing or regulating an aspect of veterinary medicine.

   1. ______________________________

   2. ______________________________

4. What is the purpose of the 1970 Occupational Safety and Health Act?

   ____

   ____

   ____

5. What is the responsibility of the Drug Enforcement Administration (DEA)?

   ____

   ____

   ____

   ____

6. What is a MSDS and what information does it provide employees?

   ____

   ____

   ____

7. List three standards that are governed by the USDA and APHIS according to the Animal Welfare Act.

   1. ______________________________
   2. ______________________________
   3. ______________________________

8. What is a Certificate of Veterinary Inspection?

   ____

9. List two agencies responsible for regulating the use of laboratory animals.

   1. ______________________________
   2. ______________________________

10. Who has ultimate jurisdiction over wildlife?

    ____

11. What state agency should be contacted for information about transportation, care, and rehabilitation of wild animals?

    ____

Clinical/Laboratory Activities

1. Discuss the impact of local, state, and federal regulations on the clinic with the veterinarian.
2. Research at the library or on the Internet or ask the veterinarian about current legislation involving veterinary medicine. Choose a legislative issue and write a report highlighting the negative and positive implications of the potential regulation.
3. Ask the veterinarian or veterinary technician how he or she has handled or would handle a client who has brought an injured wild animal to the clinic.

Unit Checklist

Student Name ______________________________ Overall Unit Rating ________

Activity Sheet: The Animal Care Assistant Rating ________

Comments: ____

____

____

Activity Sheet: Ethics and Public Relations Rating ________

Comments: ____

____

Activity Sheet: Regulations Rating ________

Comments: ____

____

____

Written Unit Evaluation Score ________

Additional Comments: ____

____

____

Teacher Signature ______________________________ Date ______________

Student Signature ______________________________ Date ______________

Unit II

Communication Skills

Veterinary team members must be able to communicate effectively with clients and coworkers. This unit discusses greeting clients appropriately and the importance of using proper English and medical terminology. You will learn proper telephone techniques for answering the phone, taking messages, and confirming appointments. This unit will also help you to identify urgent and emergency medical situations.

Unit Lessons

Effective Communication

Telephone Communication

Lesson 1:
Effective Communication

Objectives:

A. Communicate effectively with animal owners (clients) and coworkers.

B. Greet clients appropriately.

C. Use correct terminology and grammar when communicating with clients and coworkers.

D. Treat clients and coworkers with respect and courtesy.

E. Respond appropriately to client questions.

F. Recognize the human/animal bond.

G. Recognize grief from animal loss.

Key Terms:

- Verbal communication
- Nonverbal communication
- Empathy

Veterinary medicine involves working with human beings as much as it does with animals. The animal care assistant must be thoughtful and professional with clients and coworkers. Communication is the key to efficiency in the workplace and to effective client education and quality service. This lesson describes effective communication and techniques for making clients comfortable.

Effective Communication

Communication means transmitting information from one person to another either verbally or nonverbally. **Verbal communication** is the use of actual words to transmit information; verbal communication can be the use of either spoken or written words. **Nonverbal communication** includes using body language such as facial expressions, inflection and quality of voice, and gestures. Nonverbal communication adds to the impact of verbal communication. Some clinics use an oral or spoken report system and others use a written report system. Many clinics use a combination of both systems.

When speaking or writing choose words efficiently to convey information that can be easily understood. The use of slang or poor grammar may give the listener a bad impression of you and the clinic. Misspelling words and bad handwriting in a medical setting can also cause confusion and may lead to critical mistakes. Always show interest by turning your body toward and making eye contact with anyone talking to you. A smile, at appropriate times, shows that you are friendly and polite. If a client has just lost a pet or is having a pet euthanized, it is more appropriate to show concern with a sympathetic expression, rather than a big smile. Speak distinctly and clearly with a pleasant tone of voice and listen carefully to the person speaking. If you slouch, yawn, or act distracted when speaking with a person, he or she might think you are bored or not interested in his or her needs.

Know the limits of your own knowledge and defer questions with difficult answers to an experienced staff member or the veterinarian. Follow through and obtain feedback to ensure your communication is understood. Be sure the person asking a question receives an answer. For example, if you are responsible for reporting a test result to the veterinarian, veterinary technician, or the client, report the information as soon as possible before going on to another assignment.

Greeting the Client

The practice's success depends upon the first impression that the client receives from the clinic. Every employee is a reflection of the veterinarian and the practice. The first impression begins when the client walks in the door or calls on the telephone. The staff should try to make the client feel important and comfortable in the veterinary office. A friendly and professional atmosphere will foster the client's trust in the practice.

Everyone should be acknowledged warmly as they enter the reception area. Greet every person with a smile and attend to each person as quickly as possible. Even if you are in the middle of helping another client, you should at least make eye contact and acknowledge arriving clients. Try to use clients' names when greeting them. An example of a proper greeting in a veterinary office may be, "Hello, Ms. Browning. How can we help you today?" If you do not know a client, check the appointment book and time to see who is expected so that you may express a more familiar greeting. If still unsure, ask politely, "Is this Fluffy Jones for her 10:00 appointment?" or "Hi, I'm Mary, how may I help you?" Once determining the reason for the visit or call, quickly finish your current task and then give the new arrival your attention. If it is very busy during a client's arrival, you may ask another employee if he or she can attend to the person more efficiently.

Treat all clients, including people who have physical, sensory, or mental disabilities, with respect and dignity. Be aware of any provisions the clinic makes for clients requiring special needs. A good rule to follow is the Golden Rule which is always to treat others the way you would want others to treat you.

When a client checks-in, the receptionist or assistant should advise the client if he or she must wait more than a few minutes before the veterinarian can see the animal. People do not enjoy having to wait and will appreciate knowing how long the delay might be. Update clients if it appears that the delay may be longer; it is important that they not feel forgotten or that their time is not valuable.

Ask clients with pets scheduled for routine, annual physical exams if they brought fecal specimens and then take any specimens back to the lab immediately. Fecal and urine tests take 10-15 minutes to complete and if possible should be started before the actual office visit for best use of time. This practice will also make clients feel like their examinations have already begun while they are waiting.

Many clinics are prepared only to give service to clients with appointments, but some people may drop in with questions and problems without appointments. They should not be surprised if the doctor is not immediately available. Treat them with courtesy and either schedule an appointment to visit with the veterinarian personally, or invite them to leave a message. Scheduled clients should receive help first, but many walk-in clients may become very good repeat customers if they are handled well by the staff before their initial appointments.

Respect Coworkers and Clients

Many people invest their time, money, and energy into learning the technical part of their jobs, yet developing "people skills" should be an equally important investment. People skills are essential to success in dealing with both coworkers and clients, and can be developed through interpersonal relationships. A "people person" is a person who naturally senses personality types and knows the best way to communicate with different individuals. He or she can say the right thing in the right way for the current situation. While this ability is natural for some personality types, it can be developed by careful self-examination. Pay attention to the words that you use, your tone of voice, body language, and the reactions you receive from people with whom you are talking.

Communication is a skill that takes practice. Consider the following situation: A client's animal has been boarded at the clinic and was very difficult. In fact, a coworker was nearly bitten more than once. Nobody on the staff was able to warm up to the animal. The wrong thing to say is, "Boy, we're sure glad to see you! Taffy has been so mean during her stay that we could barely get food and water into her, much less take her out on a leash. You can get her yourself. Nobody else can get near her!" Pets are very special to most people, and they will not want to know that their pets' caretakers did not like them. The right thing to say is, "Hi, Mrs. Jones! Taffy will be very glad you're home. We have done everything we could to make her stay pleasant, but she was really nervous in the kennel and did not want much attention. The doctor doesn't feel that she has anything more serious than homesickness, but he does want to talk to you before you take her home. Would you like to come back with me to get her from the kennel while we wait for the doctor?"

Remember that no one works alone in the veterinary clinic and no one is perfect. While every employee should strive to be a productive, responsible member of the staff, anyone may make a mistake or fail to do something. Hopefully, it will not be something critical. *If your gut feeling is that it is an important oversight, go straight to the veterinarian or senior staff member for advice.* Clients may perceive slight inefficiencies to be worse than they are in reality. Consider the following example: You are assigned to help the receptionist with checking patients in and out. A client enters the clinic and announces that she is here for her 2:00 appointment but there is not an entry in the appointment book for the visit. An incorrect response would be, "You must be mistaken. You do not have an appointment because it's not in the book. You must have gotten your days mixed up or called another clinic. You'll have to come back another day." This response could make the client feel stupid. Another wrong response is, "I bet that dumb new girl forgot to write your appointment down and now it's going to mess up everybody else's day. If she paid more attention to what she's doing, maybe she wouldn't make so many mistakes." This response would make another employee look bad. The right thing to say is, "I'm sorry Mrs. Jones, but I don't see your appointment in the book. Is it possible your appointment was for another day later in the week? If you don't mind waiting for just a moment, I'll check with the receptionist to see if we can straighten this out. We'll do our best to be sure your time is not wasted. This doesn't happen often but it may have been our mistake."

Do not allow personality conflicts to affect relationships with coworkers. It is not necessary to like every coworker with whom you share responsibilities, but you must be able to work alongside them in a professional and mature manner. Finger-pointing and gossiping does not belong in the workplace; these actions are counterproductive and will create a negative atmosphere in the practice that clients may sense. If the veterinary staff approaches its job as a team, working toward a common goal, clients will be more satisfied and the practice more successful.

Professional Medical Language

Proper grammar and English usage are vital when speaking with others. Using poor grammar implies a lack of knowledge and gives the client an undesirable impression of the clinic. For example, if you were to say, "We don't have no file on Pebbles. When was the last time Dr. White seen ya?," the client would have a poorer perception of you and everyone else at the clinic than if you said, "We cannot seem to find Pebbles's file. Can you remember the last time you brought Pebbles to our clinic?" Be careful to avoid using profanity anywhere in the clinic. Imagine how a client would feel if he or she heard a staff member cussing at an animal or a coworker. Profanity is unprofessional and does not belong anywhere in the clinic.

Besides using proper English, the assistant should use proper medical terminology whenever possible. Learn the correct terms for common office procedures and use them. For example, the proper terms for surgical sterilization of pets are "spayed" or "neutered," not "spaded" or "fixed." A more complete discussion of terminology for procedures is found in Unit VIII, Lesson 1. An important part of being a member of the veterinary team is to help educate clients to better understand their pets' care and needs. This includes saving clients the embarrassment of using improper terminology. Clients do not need to understand every technical point in veterinary medicine, but veterinary staff members must appear to be informed and concerned about the clients' understanding of their pets' needs. Informed assistants should take pride in their position as paraprofessionals and informed clients are better animal owners. Familiarize yourself with common purebred animals so that you will appear knowledgeable to the client. If unsure of the correct terminology, check with a qualified staff member.

Answering Client's Questions

Clients frequently approach clinic staff to ask questions about their pets' health. Animal care assistants should limit their responses to general information that they have been authorized to discuss such as office hours and general recommendations regarding preventative health care. Animal care assistants should be familiar with the standard recommendations for vaccinations in the species seen at their clinic and the appropriate ages for starting and boosting those vaccinations. Most veterinarians follow the same basic guidelines, but a few exceptions and personal preference may influence their choice of vaccines and schedules. When answering questions about vaccinations, choose your words carefully to allow the veterinarian to make variations.

For example, "The doctor generally recommends that puppies have a physical and fecal examination at 6-8 weeks. At that time, they may start their series of distemper-parvo vaccinations if they are healthy, wormed, and if appropriate, started on heartworm preventative. Other optional vaccinations can be discussed with the doctor at that time. Puppies without special health problems return for distemper-parvo boosters every 3-4 weeks at the doctor's discretion. Once the initial series is completed, an annual physical, fecal, and heartworm exam is recommended along with the appropriate vaccination boosters."

If a client is concerned about the danger of vaccination side effects, be careful in your response. Vaccinations against infectious diseases are done every day without a problem, but dangerous, life-threatening allergic reactions can occur. The wrong response might be, "Oh, you're worrying for nothing. We do it all the time." The right response is, "The doctor feels that the risks of vaccination are much less than the risks of contracting the disease, but on rare occasions, animals may have allergic reactions that require emergency attention. Why don't you ask the doctor to discuss the risks and benefits of vaccinations during your visit."

Always politely defer any questions regarding procedures, treatments, or the status of a patient to the veterinarian or veterinary technician. Animal care assistants should never give medical advice or speculate on a diagnosis when speaking to a client. The veterinarian or clinic manager may educate the assistant regarding common problems such as flea control, general grooming, and nutrition. The assistant may be authorized to discuss management basics with clients once the assistant has a thorough understanding of the doctor's philosophy and the over-the-counter products carried in the clinic. If you are authorized to make these types of recommendations, be sure that you know the "red flags" that clients may bring up to indicate that the animal has a medical problem and should see the doctor. For instance, if the client describes hair loss, scabs, and severe itching, the pet may have a flea allergy, mange, or a skin infection that will require special medical attention. There are some generally accepted rules regarding animal nutrition such as the benefits of feeding premium diets such as Science Diet, Iams, or Eukanuba instead of the commercial food brands available in grocery stores. Special nutritional problems are common in companion animals and may require prescribed diets that the veterinarian must recommend. Any client who is asking about diet changes because of concern for a pet's health should be advised to ask the veterinarian before making any changes.

Remember that the veterinarian is trusting your judgment when authorizing you to discuss any type of animal care with a client. You must use good judgment to deserve this trust. All veterinary clinic employees may seem to be experts to their family, friends, and acquaintances. You may be asked questions that you are unable or should not try to answer. While you will be more informed than the average pet owner and you should be proud of your knowledge, recognize the limitations of your position. One of the most important responses that an animal care assistant should learn is, "I think you should be concerned with your pet's behavior, but only the veterinarian is qualified to discuss the many possible causes for it. I would recommend that you schedule a visit with the doctor as soon as possible."

The Human/Animal Bond

Pet animals are like children to many people; they are part of a family sharing a strong emotional attachment. Companion animals increasingly are being recognized for their therapeutic value in helping human beings to cope with physical or emotional problems. Pet therapy is becoming more popular and is being incorporated into many nursing homes and hospital programs. Support dogs, or seeing-eye dogs, are a good example of the value of the human/companion animal bond. People who have disabilities can live more productive, active lives with the help of their canine companions. Another example is the relationship between service dogs and police or military handlers whose lives depend on each other.

Few people can interact with an animal regularly and not develop an intense emotional attachment. Veterinary practices are good places to study human behavior as well as animal behavior. The animal care assistant will meet many people with different personality types and will be involved in many potentially emotional situations. Most pet owners are compassionate, reasonable people who share with the veterinary staff a mutual love of animals. However, every individual has a personal philosophy regarding the care of his or her pet. Some people will put their pets' needs above their own and will do anything within their means to meet their pets' needs. Others want only the basics and cannot or will not go to extremes for health care and its expense for their pets. Regardless of clients' positions, staff must offer all clients their best service and respect their decisions regarding care, even if the decision is a compromise between the best and worst option.

There is a tremendous variation in how different people will react to the same situation. Some people may appear to be completely unconcerned when facing a serious situation and others may become very upset over a very minor problem. Even the most routine procedure may make pet owners nervous and stressed. Recognizing clients' feelings and sympathizing with them is important. If clients seem edgy or angry, do not take their words or actions personally. If you are the first to recognize that a client is particularly upset, usher the client to a quiet part of the clinic and inform the veterinarian or office manager immediately.

Some people are pleasant and patient through the worst of situations, and others cannot be pleased no matter how hard you try. Maintain a strong and professional image no matter how unpleasant the situation. Try to learn from unpleasant confrontations. Apologize sincerely if you feel that you have made a mistake, but be careful to not reflect badly on the rest of the staff. If you cannot find fault with your actions, then let the issue go and try not to be hard on yourself. Coworkers are a good support system for preventing confrontations and soothing bruised egos. Some veterinary practices offer employees formal training to anticipate, prevent, and deal effectively with potentially unpleasant situations.

Pet Loss and the Grieving Process

While intellectually people know that their pets will not live forever, emotionally they are unprepared for serious illnesses or pet losses. When a pet becomes seriously ill or dies, people typically experience many emotional and physical reactions. The following is an outline for a general pattern of the grieving process. The process is different for everyone; a client may not experience all these feelings, nor will everyone express emotions in a set order.

Numbness and Denial - Most people feel shock and a sense of disbelief when a pet dies, whether the death was anticipated or sudden. These feelings are defenses against feeling the full impact of the loss.

Painful Feelings - After the initial shock and denial, the owner may feel anger. The owner may direct his or her anger at the animal for dying or at the veterinary staff for not saving the pet's life. Grieving owners may turn their anger into guilt and blame themselves for their losses.

Acceptance - After some time passes, pet owners will work through their painful feelings and stop feeling such intense anger, pain, and guilt.

The grieving period varies and may last for days or weeks. Professional grief counseling is available for pet owners who cannot cope with their loss on their own. The veterinary staff can only show genuine compassion and support for the family as they work through the grieving process.

Expressing sensitivity to a grieving client's feelings is critical for all members of the veterinary staff. You should be able to express **empathy** to clients. Empathy is intimate understanding of another person's feelings, thoughts, and motives, by putting oneself into the other person's position. Even if the day has been a happy one until that moment, joking and light conversation that a grieving client can hear is inappropriate. Greetings to other clients in the room should be quietly welcomed. For example, "Hi, Mrs. Jones we'll be with you in a moment. We need to let these folks have some privacy. It's a sad day for them." Do not say, "Beautiful day, isn't it, Mrs. Jones? I'm sure glad Lady is doing well. Poor old Fluffy has had better days." Other clients would appreciate the same consideration if they were to lose their pets.

Observe the grieving clients to determine how much to say or not to say. Some clients need to talk to whomever is there at the moment. They may need to communicate more than might be comfortable if you are not well-acquainted. Most people do not need conversation as much as they need someone to listen. Other clients grieve very privately and want only to pay their bills and leave. If you are uncomfortable in determining a client's mood, a safe response is, "Would it be easier for you if we sent a bill or to take care of it all now?" and when the client leaves, "We'll be thinking about you and Fluffy. Please call if we can help in any way." Many practices send a sympathy card to the family to show their concern. Some practices send contributions to special interest charities in the pet's name. While losing a pet in a clinic can create a negative association with the clinic, if handled properly by the staff, the client will not consider taking other pets or a new pet to any other veterinarian.

You may be tempted to mention to the client that an orphan puppy in the kennel needs a good home. It is better to wait for the client to indicate that he or she is ready to look for a new pet. While most pet owners who lose a pet will eventually get another one, many are not immediately ready to replace Fluffy and cannot imagine that a new animal could ever take her place in their lives. When they are ready for a new pet, they may return to the clinic to see if any orphans are available. These opportunities give the staff a chance to strengthen the bond with the client and to share some happy, if tearful, memories of the deceased pet, and the joy that a new pet will bring to the client's life.

Test Your Knowledge: Complete the following activity sheet to test your knowledge and understanding of the materials you have studied in this lesson.

Lesson 1: Effective Communication

Activity Sheet

1. List three communication techniques that will help you effectively convey information to coworkers and clients.

   a. ____

   b. ____

   c. ____

2. List three examples of nonverbal communication that may show the person with whom you are talking that you are bored or not interested in the conversation.

   a. ____

   b. ____

   c. ____

3. Describe the proper way to greet a client when he or she first walks into the clinic.

   ____

   ____

4. Why is it important to use proper grammar and terminology?

   ____

   ____

5. What are two types of language you should not use in the clinic? Explain why it should not be used.

   a. ____

   ____

   b. ____

   ____

6. What is the Golden Rule?

____

____

7. What questions asked by clients may the animal care assistant answer?

____

____

8. What should you do if a client asks you about his or her pet's health?

____

____

9. Give two examples of the human/companion animal bond.

a. ______________________________________

b. ______________________________________

10. What should you do if a client decides a course of treatment for the pet that you would not have chosen?

____

____

11. A pet owner may experience many emotions after the death of a pet. List and explain the three stages of the grieving process described in this lesson.

a. ______________________________________

____

b. ______________________________________

____

c. ______________________________________

____

12. What is empathy?

Clinical/Laboratory Activities

1. Mrs. Linderman has just picked up her cat, Buffy, from the veterinary clinic. Buffy has recently undergone a complex surgical procedure. As you help transport the client's pet to the car, she asks you, "Do you think that Buffy is going to pull through and return to normal health soon?" What is your response? Discuss your answer with another student or your clinical supervisor.

2. Role-play difficult client situations in the classroom. Students assume roles of clients or of the animal care assistant. Clients should portray different personality types. Set up problem situations such as several clients arriving at the clinic at the same time, clients without appointments, and angry or grieving clients.

3. Discuss with the veterinarian, the types of information you will be authorized to communicate to clients. If expected to convey information about vaccinations, nutrition, or over-the-counter medications, find out what knowledge the veterinarian would like conveyed.

4. As a discussion group of students or with a coworker at the clinic, discuss personal attachments to pets and pet losses.

Lesson 2:
Telephone Communication

Objectives:

A. Answer the telephone properly.

B. Place a caller on hold and transfer calls.

C. Take accurate telephone messages.

D. Identify urgent or emergency telephone calls.

E. Confirm appointments.

Key Terms:

- Screening
- Complaint
- Prioritize
- Urgency
- Emergency

Most veterinary practices have a receptionist or appointment manager who has the primary responsibility of screening telephone calls and organizing the veterinarian's daily schedule. Practices with this type of staff may only require the animal care assistant to assist the receptionist to be more efficient. However, an animal care assistant in smaller clinics may be responsible for telephone communication. Answering the telephone is a very important responsibility. Before assuming telephone duty, become familiar with common office practices.

Telephone Techniques

Always answer the phone on the first or second ring, and no later than the third ring. Use a pleasant tone of voice and remember to smile when answering the telephone. Although the caller cannot see your face, he or she can hear the smile in your voice. First greet the caller and then identify the veterinary practice and yourself before offering assistance. For example, a proper telephone address should include, "Good afternoon, Westside Veterinary Hospital, this is Sandy, how may I help you?" Speak clearly and listen carefully to what the caller has to say. Keep a notepad handy for jotting down names and messages.

When answering the office telephone, give the caller your full attention and respond concisely and professionally. Never express anger or frustration with a caller, even if the caller is rude or angry. The caller may be having a serious problem and might be very upset. It is important that the caller feel your genuine concern for his or her situation. He or she may need to be assured that you are listening and will promptly report the problem to the veterinarian and veterinary staff. It is critical to the caller that you direct his or her problem efficiently to the proper personnel.

If the caller needs to make an appointment to see the veterinarian, allow the person to speak with the staff member trained in appointment scheduling. Many veterinary clinics have time scheduled for certain procedures. Some procedures require special instructions the client must follow before the visit. An improperly scheduled appointment can disrupt an entire day's schedule.

Often, clients ask questions over the phone that cannot be answered simply. It is illegal for any staff member to speculate on a diagnosis over the telephone. The animal care assistant must never attempt to guess what might be wrong with a client's animal. When a client asks for such information, it is best to explain politely that the veterinarian will need to examine the animal in order to evaluate the problem. Then refer the client to a qualified staff member to schedule an appointment. In special situations, the veterinarian may prefer to speak to the client immediately or return the call rather than wait for an appointment to be scheduled.

"Hold, Please."

If you cannot give a caller your immediate attention, you may need to place him or her on hold. Answer the phone as you normally would, then add, "Can you hold for a moment, please?" Allow the client to respond to your request before punching the hold button. Knowing the intention of the call will help you direct the caller to another staff member immediately. Make every effort to keep the caller's wait brief. Try to give the caller some idea of how long he or she may need to wait. There may be times when it is better to take the caller's name and number so that you can call the person as soon as you are finished with another task. When you return to a caller on hold, always thank the person for waiting.

Many clinics have elaborate telephone and intercom systems. If you are expected to use a complicated system, obtain adequate instruction before attempting to answer the telephone. Depending on the phone system at the practice, you may be required to transfer phone calls. When transferring a call, inform the client of the transfer and always confirm that the call was successfully transferred.

Taking Telephone Messages

If the caller is unable to speak with the person he or she called, complete a telephone message slip that can be easily read and understood. If it is a message for the veterinarian, it is important to determine whether the person is already a client and the animal has been seen before, or a new client with an animal that has never been seen at the clinic. If the caller does not volunteer the needed information, ask politely. The following information should be included on a message slip:

1. The name of the person with whom the caller wanted to speak.
2. The current date.
3. The time of day the call was received.
4. The name of the caller and pet's name correctly spelled.
5. Whether the caller is an existing client or a referral from an existing client.
6. The reason for the call (client's concern, business meeting, personal call, etc.)
7. Any message the caller wants to leave and any sense of urgency expressed. Try to determine whether the client wishes his or her sick pet to be seen as soon as possible.
8. Indication of whether the caller expects a return call or will call back later.
9. For calls that need to be returned, include the number and best time to reach the caller.

Let the caller know that his or her needs are appreciated and give assurance that the message will be relayed promptly. Give the caller some idea of the first available opportunity the call might be returned and also the latest time the call might be returned. Do not give the caller the impression that staff is too busy to attend to him or her. If a caller is anxious or feels that his or her pet's situation is an emergency, do not make the person wait. Immediately give the call to a qualified staff member, at least until the situation can be evaluated and the caller calmed.

Identifying Emergency or Urgent Telephone Calls

While the current trend in veterinary medicine is toward specialization, facilities dedicated to emergencies are only found in larger cities. Most veterinary clinics or hospitals provide general services that include a wide range of procedures. General services can be routine preventive health care such as vaccinations; elective procedures such as neutering and dental care; and diagnosing and treating very sick or injured animals in true emergency situations. In veterinary clinics priorities constantly shift throughout the day and challenge all staff members. The process can be very satisfying if handled properly and professionally; if approached poorly and randomly, utter chaos can result.

Screening telephone calls in a veterinary practice is one of the most important jobs. Screening calls means to systematically sort through the information you have been given by the caller in order to determine the seriousness of his or her **complaint**. In medicine, the "client complaint" is the reason for the call, the situation or symptom that has arisen that led to the need for advice. When taking a call, it is important to relay the message to the veterinarian in the client's own words to avoid misinterpreting the situation. Screening calls is very difficult because callers may or may not realize the seriousness of the complaint.

Animal care assistants should learn to **prioritize** many calls and questions to sort and direct information appropriately and efficiently. The root word of prioritize is priority; a priority is a task or concern that is ranked above other tasks or concerns in order of importance or **urgency**. The root word of urgency is urgent. Urgent is an adjective that defines a situation as demanding immediate attention; it may or may not be life-threatening, but should be considered as such until more information can be obtained from an examination. An **emergency** is a situation or event of a serious nature that develops suddenly and unexpectedly and demands immediate action; an emergency is a potentially life-threatening situation.

While it may seem like a simple assignment, the importance of answering telephone calls cannot be underemphasized. The person who answers the telephone in a clinic is the voice of the entire practice and makes the first impression on callers who may have never been to the clinic. When answering the phone, be empathetic to the caller's needs; put yourself in the caller's position while taking the complaint. Pet owners may be very emotional about their animals and require careful handling in order to maintain and protect the caring image of the practice.

The following groups of words are commonly expressed by a client over the telephone and may impart a sense of urgency to the call. Some are obvious emergencies; others are clues that a problem may rapidly progress to an emergency. The emotional status of the caller may not indicate the seriousness of a situation. Some people panic and overreact when facing problems with their animals; others may only seem mildly concerned during a true crisis. Every situation must be evaluated individually. Prioritization helps determine whether a given complaint merits interrupting the veterinarian immediately, or whether a same-day or near-future examination will suffice, and if the complaint is really a problem at all.

Key Words for Emergencies and Urgencies:

(These words are not listed in order of priority.)

Antifreeze ingestion
Asthma attack
Airway obstruction
Animal aggression or attack
Anxiety attack
Animal bite
Accident
Breathing problem
Bleeding
Bloated
Blindness, sudden
Broken bone
Choking
Collapse
Chocolate ingestion
Convulsion
Cyanosis (blue gums)
Coma
Constipated cat
Dead
Diabetic complication
Diarrhea
Disoriented/dizzy
Eye injury
Electrical cord/electrocution
Facial swelling
Fainting
Fracture
Frostbite
Gagging
Hives
Hit by car
Heart condition complications
Hyperactive
Injury
Intense itching
Labor (giving birth)
Newborn animals
Orphaned animals
Open wounds
Overheating
Overdose
Pain
Poison
Pale gums
Paralyzed
Seizure
Smoke inhalation
Shock
Snakebite
Staggering/drunken
Straining to eliminate
Stupor
Unconscious
Unresponsive
Unplanned breeding (mismating)
Uncontrollable vomiting
Wheezing

Emergency situations that require immediate attention include:

Airway obstruction, choking, or obvious respiratory distress
Collapse or sudden incoordination
Convulsions or seizures may require anti-seizure medication
Dogfights should be stopped before severe injures occur
Electrocution can cause cardiac arrest
Facial swelling, hives, and intense itching may be an allergic reaction
Poison ingestion is best treated quickly to minimize toxic effects
Uncontrollable panting may signal the onset of overheating
Unresponsive or unconscious patients may be saved by treating shock

Urgencies include:

Accidental breeding, that requires attention within 24 hours
Anxiety attacks may quickly lead to seizures and overheating
Bleeding, spurting blood is worse than oozing blood
Constipated cats or dogs may have bowel or bladder obstructions

Intense itching may signal allergic reactions or lead to self-trauma

Appointment Confirmations

Staff members at many veterinary clinics call clients the day before their scheduled appointments. This practice helps to limit the number of missed appointments by gently reminding clients of the appointment date, time, and any special instructions. Missed appointments result in a loss of time and money for the veterinary clinic and can inconvenience the staff and other clients in need of their services.

Most clients appreciate a confirmation of their appointment, especially if some time has passed since the appointment was made. A client may have to change his or her appointment time for some reason. If the clinic knows this a day ahead of time, the time slot can be filled by someone else and the original appointment rescheduled.

When confirming an appointment, identify yourself and the clinic and state simply that the reason for the call is to confirm the patient's appointment date and time. The following is an example of a proper confirmation, "Hello, Mrs. Green, this is Sandy from Westside Veterinary Hospital. I am calling to confirm Pebbles's appointment with Dr. White tomorrow afternoon, April 15, at 2:00 p.m. Don't forget to bring a stool sample. We'll look forward to seeing you then, unless we hear otherwise."

Test Your Knowledge: Complete the following activity sheet to test your knowledge and understanding of the materials you have studied in this lesson.

After you have completed the activity sheets, you may take the written evaluation for this unit. A score of at least 80 percent indicates you may proceed to the next unit. Check with your clinical supervising staff member for skill testing.

Lesson 2: Telephone Communication

Activity Sheet

1. What are the four elements of a proper telephone address for greeting a caller?
    1. ______________________________
    2. ______________________________
    3. ______________________________
    4. ______________________________
2. Describe the process for placing a caller on hold. What should you say when returning to a caller on hold?

    ____

    ____

    ____

    ____
3. When taking a telephone message, what is the information that should be included on the message slip?
    1. ______________________________
    2. ______________________________
    3. ______________________________
    4. ______________________________
    5. ______________________________
    6. ______________________________
    7. ______________________________
    8. ______________________________
    9. ______________________________

4. What is an urgent situation?

5. What is an emergency situation?

6. List four examples of key words suggesting urgent or emergency situations.

    1. __________
    2. __________
    3. __________
    4. __________

7. List three advantages of confirming appointments for the veterinary clinic.

    1. __________
    2. __________
    3. __________

8. Give an example of what a member of the veterinary staff should say when confirming an appointment.

Clinical/Laboratory Activities

1. With other students in the classroom, role-play answering the telephone. Practice greeting the caller, putting callers on hold, completing message slips, handling urgent or emergency calls, and confirming appointments.

2. Ask the veterinarian or veterinary technician at the clinic where you are working to review the list of key words for urgent or emergency situations. Are there other situations that should be added to the list? Find out how often the clinic provides emergency care. What types of emergencies are most common?

3. Find out who is responsible for scheduling appointments at the clinic.

4. Learn how to use the clinic's phone system. If you are required to transfer calls, practice the process before trying to transfer a call from a client. Enlist the help of other staff members by using other phone lines in the clinic.

5. If you are answering the phone for a veterinarian in a rural setting or who provides care outside of the clinic, find out how and when you should contact the veterinarian. Also, find out who you should refer callers to if the veterinarian is unavailable.

Unit Checklist

Student Name ______________________ Overall Unit Rating________

Activity Sheet: Effective Communication Rating ________

Comments: ______________________________

____

____

Activity Sheet: Telephone Communication Rating ________

Comments: ______________________________

____

Skill Sheet: Take a Telphone Message Rating ________

Written Unit Evaluation Score ________

Additional Comments: ______________________________

____

____

Teacher Signature ______________________ Date ____________

Student Signature ______________________ Date ____________

Unit III

Basic Office Procedures

In some veterinary practices the animal care assistant will be responsible for assisting with basic office procedures. This unit discusses filing systems as well as how to file alphabetically and numerically. You will learn about the procedures for admitting and discharging animals to and from the clinic, the importance of animal identification, and the information maintained in the medical record. This unit also discusses organizing, restocking, and ordering supplies.

Unit Lessons

Filing

Maintaining Records

Maintaining and Restocking Inventory

Lesson 1:
Filing

Objectives:

A. Identify different filing systems.

B. File client records alphabetically and numerically.

Key Terms:

- Card file
- Manila folder file
- Alphabetical filing
- Numerical filing
- Terminal digit filing
- Out guide
- Dead files

Filing always needs to be done in a busy veterinary clinic where veterinary team members are constantly pulling and returning client files and records. The animal care assistant may be asked to help with this task; this lesson will cover the basic rules for filing.

File Systems

Patient (animal) information is kept in the client's (animal owner) file. A client's file may include information for more than one animal. The two basic file systems are **card file** and **manila folder file**. For ease of filing, folders may be color-coded or plain. The color-coded system uses different colors preassigned to numbers or letters. Card files are either 5" x 8" or 10" x 16" and fold in half. This system works well if space is a problem. It is a good system for veterinary practices that treat or see many animals only once a year for general procedures such as vaccinations, floating teeth, and heartworm testing. The manila folder file is a basic manila file that contains information sheets regarding the patient or patients. The types of information sheets will vary from practice to practice.

Filing Client Records

Files are kept in either alphabetical or numerical order. Although filing may seem a simple task, basic rules must be followed to avoid misfiling records. Misfiling makes it extremely difficult to retrieve information.

Alphabetical Filing

Most clinics use **alphabetical filing** systems in which files are kept in alphabetical order by the first letter of the animal owner's last name and then by the first name and middle initial. To save time filing, arrange the files in roughly alphabetical order by the last name before filing. If you begin filing with the file of Lisa Ashcraft and proceed through the stack until the last file of Brenda Williams, you will not need to return to the "A's" to file Mark Ashcraft's file. Keep in mind the following guidelines when filing alphabetically. Only certain guidelines may apply in particular veterinary clinics.

Guideline #1: Individual Names

Alphabetize client names in this order: surname (last name), first name, and middle name or middle initial (if any). Treat each part of the name as a separate unit. See Table 1.1.

If two or more clients have the same surname, first name, and middle name, the files may be filed by the next distinguishing unit, perhaps the address. Each clinic may use a different method in this situation.

Table 1.1 - Individual Names

Name	Unit 1	Unit 2	Unit 3	Unit 4
Levitt	Levitt			
D. Levitt	Levitt	D.		
D. Samuel Levitt	Levitt	D.	Samuel	
Brian Levitts	Levitts	Brian		
Brian Lloyd Levitts	Levitts	Brian	Lloyd	
Brian Lloyd Gwinn Levitts	Levitts	Brian	Lloyd	Gwinn

Table 1.2 - Prefixes

Name	Unit 1	Unit 2	Unit 3	Unit 4
Susan P. MacDonald	MacDonald	Susan	P	
R. J. MacLean	MacLean	R.	J.	
Justin B. McLean	McLean	Justin	B.	
Candice Marie Obright	Obright	Candice	Marie	
K. Beth O'Connor	OConnor	K.	Beth	

Guideline #2: Prefixes

A surname may have a prefix, also called a surname article. For example, *O'* is the prefix in the surname O'Brien and *Van* is the prefix in the surname VanBuren. Consider the prefix in a surname as part of the name, not as a separate unit. Ignore the apostrophes in surnames when indexing. Index the prefix "St." as though it is spelled out (Saint). See Table 1.2.

Guideline #3: Hyphenated Names

Consider all hyphenated personal names as one indexing unit. Ignore the hyphen when indexing. See Table 1.3.

Numerical Filing

The second method of filing is numerical filing, which refers to any numbered filing system. Numerical filing is an indirect

Table 1.3 - Hyphenated Names

Name	Unit 1	Unit 2	Unit 3	Unit 4
Lily Rubinson	Rubinson	Lily		
Amy K. Rubin-Stein	RubinStein	Amy	K.	
Diane Lynn Rubins-Wyman	RubinsWyman	Diane	Lynn	
S. Barbara Rubins-Young	RubinsYoung	S.	Barbara	

system that provides the client with privacy because his or her name is not listed directly on the file. This system requires the use of a cross-reference or index because numbers are assigned to each client.

Numerical filing systems can be as simple as numbering and filing from lowest number to highest or as sophisticated as **terminal digit filing**. Terminal digit filing is a method of arranging numbers so that all numbers ending in the same three last digits are grouped together. For example, files 321560, 296560, and 323560 would be filed together. The first three numbers would determine the order (296560, 321560, 323560). The advantages of terminal digit filing are evenly expanding file system sections, no periodic back-shifting, and less misfiling. Speed and ease of finding files are the biggest advantages to numerical filing.

A quick way to file individual records is to use an **"out guide"** to mark the place where a file belongs. This is especially useful when only removing a file from the filing stacks for a short period of time. An out guide could be a piece of red paper placed in the space where the file is missing. You could pull a file in front of the missing file out of place slightly, then when replacing the missing file you would know it belongs directly behind the protruding file. The out guide is like a bookmark for the filing stacks.

Inactive accounts are called **dead files**. Files are moved to a separate area after a period of time that a client has not been seen at the clinic. The time limit will vary from clinic to clinic but the average is three years.

Computerized Records

It is standard practice to keep a printed "hard" copy of medical records in either card files or manila folder files, but many practices are also incorporating computers into their businesses. Software programs have been customized for veterinary use. These programs have many capabilities including invoicing, generating vaccination reminders, printing client instructions, and daily and monthly bookkeeping. Some programs generate prescription labels and manage inventory and boarding reservations. Many veterinarians also use networks to search current literature for assistance with case management.

In theory, it is possible to develop a "paper-less" medical record system that would eliminate the card file and manila folder file records entirely. However, variables such as electricity and the reliability of computer functioning may make access to critical information impossible at certain times. For this reason, most practices use computers primarily for bookkeeping and inventory purposes. A daily backup protects new information on the computer's hard drive to minimize information loss. The computer record is usually only a chronological and financial record while the hard copy of the medical record contains the details of a patient's medical history.

Veterinary applications software vary widely and are only as good as the people operating them. Computers can improve efficiency but are not without problems. The animal care assistant may or may not be expected to operate these programs. Having basic computer skills will help anyone learn different systems more quickly.

Test Your Knowledge: Complete the following activity sheet to test your knowledge and understanding of the materials you have studied in this lesson.

Lesson 1: Filing

Activity Sheet

1. Name three types of filing systems.

   a. ______________________________

   b. ______________________________

   c. ______________________________

2. What are two methods of filing?

   ____

   ____

3. Write the following names in the order that they should be filed alphabetically.

Jeanette Agan	____________
Sam P. McDonald	
John Harris	____________
Kathy Agan	
D. Marie Rutledge	____________
Mike McDonald	
	____________
	____________
	____________

4. Write the following numbers in the order that they should be filed numerically by terminal digit.

665389	____________
013389	
589389	____________
987389	
121389	____________
456389	
	____________
	____________
	____________

Clinical/Laboratory Activities

1. Discuss your responsibilities for handling files with the veterinarian or appropriate staff. If responsible for filing, learn the clinic's filing system.

2. Find out if the clinic uses computers and what your responsibilities are that require computer use.

Lesson 2:
Maintaining Records

Objectives:

A. List means of permanent and temporary animal identification.

B. Complete identification band and cage card.

C. Identify forms and information included in the animal medical record.

D. Use observation skills to assist with daily progress notes.

E. Assist with admitting animals into the clinic according to office procedures.

F. Assist with discharging animals from the clinic according to office procedures.

Key Terms:

- Neck bands
- Cage cards
- Tattooing
- Microchip identification
- Branding
- Ear notching
- Medical record
- Progress notes

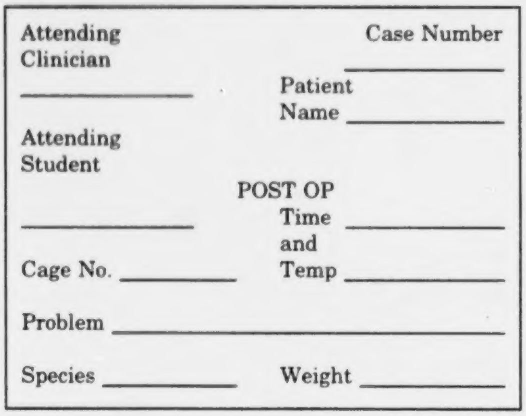
Animal Identification

Correct animal identification must be placed on the animal and its cage, run, or stall. Identification methods are vital because many animals, especially purebreds, have the same basic distinguishing features. Confusing patients could cause the wrong procedure or treatment to be performed on an animal, a catastrophe for both the animal and the veterinarian's liability and reputation. Returning the correct animal to its owner is also very important.

Temporary Identification

Temporary methods used to identify patients may vary from practice to practice. **Neck bands**, or hospital collars, and **cage cards** are the most commonly used methods of identification. Figure 2.1 illustrates a cage card. Information such as the pet's name, owner's name, date admitted, and reason for admission is written on bands and cards. Important medical conditions such as known allergies or chronic conditions may also be included. This information is usually abbreviated and comes from information in the animal's medical record. Always obtain this information from the medical record or directly from the animal's owner at the time of admission. Cage cards in the housing area should always be moved with the animal. Replace damaged neck bands immediately and address any confusion or questions to the veterinary technician or veterinarian.

Figure 2.1 - Cage Card



Attending Clinician ______________

Case Number ______________

Patient Name ______________

Attending Student ______________

POST OP

Time and Temp ______________ ______________

Cage No. __________

Problem ______________________________

Species __________

Weight __________

Permanent Identification

Permanent animal identification systems are used to help return lost or stolen animals to their proper owners. There are several methods of permanent identification. The method used depends on the animal's species, the value of the animal, and the owner's preference.

Tattooing is the process of inserting a pigment under the skin to leave a permanent mark. Depending upon the species, tattoos are placed on different areas of the body. Dogs, cats, horses, and rabbits are routinely tattooed on the ear, lip, or inner thigh. Anesthesia may or may not be necessary for tattoo application. National registries record animal tattoo numbers for efficient tracing. Tattoos may be altered or may fade with time.

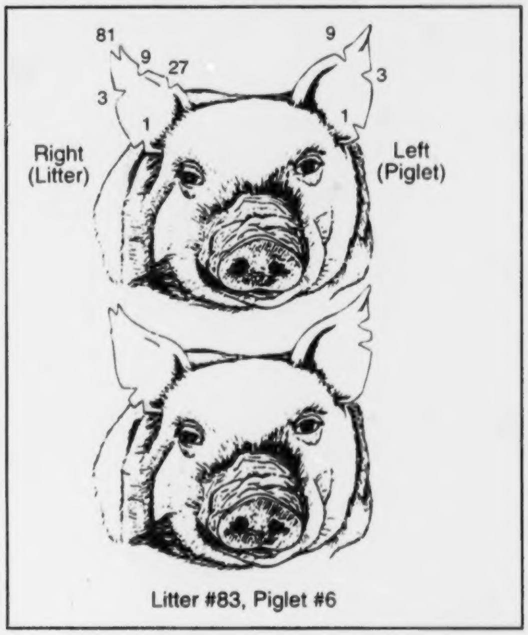
Microchip identification is a newer means of permanent identification. This system consists of two parts, the microchip itself and the microchip reader. The chip is a small transponder made up of two main components, a numbered microchip with an attached copper antenna, enclosed in a strong glass capsule. Microchips are about the size of a piece of rice and are injected under the skin with a syringe and needle with little discomfort to the animal. The scanner or reader is a device that is waved over the area of the chip and displays the chip's number on a LCD screen. Microchips are most often injected in small animals, including dogs, cats, birds, and ratites (ostriches, emus, rheas). They are permanent, unalterable, and can never be duplicated. The microchip manufacturer maintains a record of all numbers and animal owners. Many humane organizations, animal control units, and veterinary practices routinely scan for microchips in animals that have been found.

Food animals, horses, and laboratory animals can be injected with microchips, but typically rely on other more traditional and economical forms of identification, such as tattooing, branding, and ear notching.

Branding is the process of applying a permanent mark on an animal's skin. This method of identification has been used for centuries. The two methods of branding used are burning the skin with a hot iron or freezing the skin with liquid nitrogen. Hot branding creates a permanent scar on the skin; freeze branding causes the hair to grow in white. Brands consist of numbers, letters, or a combination of the two. Anesthesia is usually not used and some discomfort does occur, especially with hot branding. Branding is a topic of concern for some humane organizations.

Ear notching is an identification system used mostly with swine, cattle, and laboratory animals. It is easy to do, easy to read, and inexpensive. In swine, it is done very early in a piglet's life to indicate its herd of origin. There are many systems for ear notching. The example provided in this lesson can identify up to 161 litters. The ear is divided into quadrants that include an inner and outer half and top and bottom edges. Each quadrant can have one or two notches. Notches on the right ear identify the litter number; notches on the left ear identify the number of the piglet in the litter. Adding the number of notches determines the number of the litter and the piglet's number within that litter. In this system, after the 80th litter has been notched, the top of the right ear is notched to begin litter 81. Figure 2.2 illustrates the ear notching system described in this lesson.

Figure 2.2 - Ear Notching



Medical Record

The **medical record** is a legal document containing information about the animal's life and health history. The animal care assistant may be responsible for checking the completeness of the record or making notes in daily progress charts but will not be writing in the actual medical record. To assure efficient case management and adequate documentation for legal purposes, the veterinary technician and veterinarian are the only staff members who record information in the medical record. They are responsible for the accuracy and completeness of the medical record.

The medical record described in this lesson refers to companion animals, such as pets and horses. Livestock records are usually in the form of herd health records. Veterinary records vary greatly from practice to practice, but all records should include basic information:

- Animal owner's name, complete mailing address, home telephone, and work information.
- Pet's name.
- Pet's breed, color, sex, reproductive status (male, male/neutered, female, female/spayed), date of birth.
- Pet's general medical history (vaccinations, dewormings, nutritional information, known allergies, past and current medical problems or surgical procedures).
- Detailed description of medical problems by date. This should include a description of the complaint, concise documentation of information gathered to support the diagnosis, justification for selected treatments, documentation of the prognosis or predicted outcomes, and actual response to treatment.

The original animal medical record, including radiographs, laboratory reports, and daily progress notes, is the property of the hospital or veterinarian who is providing the service to the client. Medical records are recorded in ink in standard medical terminology and should not be altered in any way for legal reasons. Many practices are computerized, but also maintain paper records as the primary legal records. Copies of the record may be requested by the client and may be released at the discretion of the hospital owner or veterinarian. The medical record contains confidential communication between the veterinarian and the animal owner and may not be released to or discussed with outside parties without the owner's authorization.

Medical Forms

General Medical History Forms include vaccination and deworming history, results of routine laboratory tests, nutritional information, and past and current medical problems or surgical procedures. Many practices use a cover card or sheet for summarizing pertinent information in one place.

Screening Physical Examination Forms are completed for every visit the animal makes to the clinic. Weight, vital signs including temperature, pulse, and respiration, and any abnormal findings of specific body systems such as the respiratory, circulatory, musculoskeletal, eye, or ear are recorded on this form following the physical examination.

Hospital Consent Forms and Fee Estimate Forms are used to document the agreement between the client and the veterinarian regarding a scheduled procedure or treatment and the predicted expense of services, procedures, and medications. These forms are intended to protect the client and the practice from disagreement and litigation and to assure that the fees charged can be legally collected. To be enforceable, the owner must review the information and sign these forms.

Progress notes are records of daily observations by the staff that are considered significant to the patient's general health status and response to treatment. The veterinarian or a specified staff member records notes in a standard format that addresses general attitude, appetite, thirst, and the quantity and quality of urine and stool produced. Abnormal observations such as vomiting, diarrhea, coughing, sneezing, or decreased activity are also recorded. Daily progress notes may be in the form of a simple checklist. Pertinent information is transferred from the progress notes to the medical record. The standard format used in most practices for medical records, and sometimes progress notes, is the SOAP system. SOAP is an acronym formed by the initials for the divisions of the progress notes. Each problem the animal has is "soaped" daily or as it occurs.

S = Subjective data is the history, symptom, or complaint described by the client.
O = Objective data includes observations made by the animal caretaker and laboratory test results, including blood tests, fecal examinations, radiographs, and physical exams.
A = Assessment or evaluation of the subjective and objective data.
P = Plan for managing the problem; plans may be diagnostic (what tests need to be run) or therapeutic (what treatments are chosen).

The veterinarian examines the animal, assesses the problem, and formulates the treatment plan for the patient, but he or she also depends on the veterinary staff to report information accurately. The animal care assistant is a critical part of the veterinary team and at some practices may be responsible for taking the patient's vital signs and reporting the animal's general status. Recording and reporting information requires careful and detailed attention. Any written information must be complete, legible, and written in ink. Errors should not be scratched out. Instead, draw a single line through the mistaken entry and initial by the error. Then write the correct information next to it and initial again. Determining casual observations from those that should be reported immediately, such as poor appetite compared to a seizure, requires common sense and experience. The veterinarian depends on all the members of the veterinary team to provide information about animals in the clinic or hospital. If your gut feeling says your observation may indicate a major problem, report it immediately to the veterinarian or veterinary technician. When in doubt, err on the side of caution.

Hospital Admission Forms are used at many veterinary clinics and are usually in the form of a Hospital Agreement Form, such as a Surgical Consent Form. This form may also be a "Drop-off" form for patients that will not be examined immediately by the veterinarian. A Boarding Agreement Form for animals staying at the clinic for room and board is another such form. These forms contain important information including the animal's name and description, the reason for the visit according to the owner, the owner's name and phone number, and a method of contacting the owner while the animal is in the clinic's care. To avoid misunderstandings, the time of day that the owner expects to hear from the veterinarian and the time that the animal is to go home should be recorded. The form should also list special instructions such as medications or feedings the animal will need during its stay. Special foods, medications, leashes, toys, or other possessions brought in with the animal should be listed and labeled during admission and taken to the storage area or person designated by the clinic to store the items.

Discharge Summary Forms summarize information such as the animal's diagnosis, treatments, or services performed, medications prescribed, postoperative instructions, recommended follow-up visit time, or the vaccinations administered and times for booster vaccinations. Most clinics follow a system for discharging animals that involves the veterinarian or veterinary technician discussing instructions with the owner before releasing the animal from the clinic. Discharge Summary Forms remind owners of important information that may be forgotten in the excitement of picking up their pets. All of the animal's possessions should be returned to the owner at the time of discharge.

Assist with Admitting and Discharging Animals

The animal care assistant is an integral part of the veterinary team. While assistants are not directly responsible for patient case management, they are critical to ensuring that animals receive quality care during visits and the client is satisfied with the care received. The responsibilities of the animal care assistant may include:

- Double-checking information on admission and consent forms.
- Completing information on identification bands or cage cards.
- Labeling possessions upon admission.
- Observing the animal's general attitude upon admission.
- Transferring the animal from the owner's possession to the proper area of the clinic.
- Transferring all possessions with the animal if moved from one clinic area to another.
- Observing and recording observations on progress notes during the animal's stay.
- Recognizing and reporting significant observations to the veterinarian or veterinary technician.
- Administering medications or performing treatments at the

direction of the veterinarian or veterinary technician.

- Assuring that the animal is in a clean environment and is fed and watered as instructed during its stay.
- Double-checking discharge instructions and making sure that the animal is clean and that all possessions and medications are presented to the owner at the time of release from the clinic.
- Assist the veterinarian or veterinary technician while he or she discusses discharge instructions with the owner. The animal care assistant may present discharge instructions to the owner for simple, routine situations.

Commonly Used Abbreviations in Veterinary Medicine

Several standard abbreviations are used by different veterinary staff. The animal care assistant should learn the abbreviations and terms that apply to his or her responsibilities. Abbreviations are often written on drop-off sheets, cage cards, and progress sheets to describe an animal, special feeding and medication instructions, or procedures. If you do not understand an abbreviation, check with another staff member to be sure you are following instructions properly. It may be a matter of life and death.

Common Abbreviations Used in Veterinary Medicine

Units used in dosage amounts:

cc.	cubic centimeter, a metric unit of volume used for liquids, also known as an ml.
ml.	milliliter, a metric unit of volume used for liquids, also known as a cc. Note: 1,000 cc's or ml's = 1 liter 30 cc's or ml's = 1 ounce 15 cc's or ml's = 1 tablespoon 5 cc's or ml's = 1 teaspoon
l.	liter, a metric unit of volume used for liquids, usually to specify volumes used in fluid therapy Note: 1 liter = 1.06 quarts or 33.8 fluid ounces
mg.	milligram, a metric unit of weight used for solids, usually used to specify dosage size of tablets. Note: 1,000 mg. = 1 gram The concentration of a liquid medication is often specified in mg. per ml.
g.	gram, a metric unit of weight used for solids, usually used to specify only the largest dosage sizes of tablets used in horses and other large animals; may also be used to weigh very small animals such as birds and pocket pets. Note: 1 gram = 1,000 mg. 28.4 g = 1 ounce
kg.	kilogram, a metric unit of weight used for solids, often for body weight instead of pounds; many veterinarians calculate dosages based on mg. per kilogram. Note: 1 kg = 2.2 pounds
lb.	English unit of weight used for solids, often for body weight; the symbol # may be used for pounds but it may also mean "number", i.e., 30 tablets would be illogical for a dosage but is an average body weight for dogs.
gr.	grain, a medical unit used by convention for a very few medications such as phenobarbital. Note: 15.43 gr. = 1 g. 1/65 gr. = 1 mg. phenobarbital: 1 gr. = 60 mg. 1/2 gr. = 30 mg. 1/4 gr. = 15 mg.

Dosage schedules:

sid	once a day or every 24 hours
bid	twice a day or every 12 hours
tid	three times a day or every 8 hours
qid	four times a day or every 6 hours

Note: Dosage time may also be written as q 14 h, q 12 h, q 8 h, q 6 h, - q = every and h = hours, the number signifies the number of hours between dosages.

Also - qod or eod, q and e = every, o = other, and d = day; these terms mean every other day.

Means of Delivering Medications:

P.O.	per os, Latin origin meaning by mouth or oral.
IM	intramuscular, used for injectable medications give into the muscle.
IV	intravenous, used for injectable medications given into the blood stream, almost always into a vein, (it can be very dangerous to give many medications into an artery); many anaesthetic drugs and balanced fluid solutions are given intravenously.
SQ	subcutaneous, used for injectable medications given under the skin (sub = under; cutaneous = skin); most modern vaccines are given subcutaneously.
IN	intranasal, used for certain vaccines such as Bordatella (kennel cough) in dogs and FIP (Feline Infectious Peritonitis) in cats; may also be used for nasal decongestants.

Special Eye Medications:

O.D.	A term derived from Latin meaning Right eye
O.S.	A term derived from Latin meaning Left eye

Feeding Instructions:

N.P.O.	nothing per os or nothing by mouth; usually seen on cages of patients scheduled to have surgery or special blood tests or who have been vomiting and/or having diarrhea.
Ad lib	A Latin derivative meaning free-choice or as much as wanted and may be used in instructions for either food or water or both.
I/D only	intestinal diet (bland food) only, an example of how a special diet might be specified on a cage card.

Miscellaneous

P.E.	Physical examination
UA	urinalysis, a laboratory exam of a urine sample
TPR	temperature, pulse, and respirations, basic vital signs included in a P.E.
WT.	Body weight in pounds or kilograms
F or FF	fecal examination or fecal flotation, a microscopic examination for intestinal parasites.
HW or HWC	heartworm check, a laboratory test for heartworm disease routinely done in dogs and occasionally in cats.
OHE	ovariohysterectomy, the proper term for spaying a female animal
VACC or VAX	vaccinations
DSH	domestic short hair, a term used for the average short-haired cat of unknown breeding.
DMH	domestic medium hair, a term used for the average cat with medium-length hair.
DLH	domestic long hair, a term used for the average cat with long hair
DOB	date of birth, sometimes and exact date, sometimes and educated guess
HX	History, usually seen in medical records and meaning significant past medical information.
SX	surgery
DX	diagnosis

Miscellaneous (Continued)

C/S	culture/sensitivity, a laboratory test on specimens from the animal with an infection to identify the microorganism causing the infection and what antibiotic will work best to clear the infection.
AB	antibiotic
TAB	tablet
CAP	capsule
RX	prescription
TX	treatment
FELV	feline leukemia virus
FIV	feline immunosuppressive virus
FIP	feline infectious peritonitis
RV	rabies vaccine
DHLPP	"distemper parvo" vaccine for dogs, short for distemper, hepatitis, leptospirosis, parainfluenza, parovovirus and may include C for coronavirus
FVRCP or FDVRC	feline distemper vaccine for cats, short for feline viral rhinotracheitis, calicivirus, panleukopenia
ITB	infectious tracheobronchitis (kennel cough) in dogs
RAD	radiograph or x-ray
AKC	American Kennel Club
F	female
F/S	female/spayed
M	male
M/C	male/castrated
OFA	Orthopedic Foundation for Animals

Test Your Knowledge: Complete the following activity sheet to test your knowledge and understanding of the materials you have studied in this lesson.

Lesson 2: Maintaining Records

Activity Sheet

1. What are two reasons why maintaining an animal's temporary identification is so important during its visit to the clinic?

   a. ____________________

   b. ____________________

2. List two temporary systems used to identify animals admitted to the clinic.

   a. ____________________

   b. ____________________

3. List five items of information written on neck bands or cage cards.

   a. ____________________

   b. ____________________

   c. ____________________

   d. ____________________

   e. ____________________

4. List and describe four permanent animal identification systems.

   a. ____________________

   ____

   b. ____________________

   ____

   c. ____________________

   ____

   d. ____________________

   ____

5. What is an animal medical record?

____

____

6. List four types of forms that may be included in the medical record and their function.

   a. ____

   ____

   b. ____

   ____

   c. ____

   ____

   d. ____

   ____

7. What are daily progress notes?

____

____

8. List six potential responsibilities of the animal care assistant when admitting or discharging animals at the clinic.

   a. ____
   b. ____
   c. ____
   d. ____
   e. ____
   f. ____

Clinical/Laboratory Activities

1. Ask the veterinarian or veterinary technician to show you animals in his or her care that have permanent identification systems.

2. Familiarize yourself with the medical records and forms used at the clinic.

3. Find out your responsibility for reporting or recording information on daily progress notes.

4. Following the clinic's procedure, assist with animals being admitted to and discharged from the clinic. Complete patients' neck bands and/or cage cards.

Lesson 3: Maintaining and Restocking Inventory

Objectives:

A. Report low inventory.

B. Restock supplies as needed.

C. Clean, dust, restock, and straighten retail inventory as directed.

Time equals money in veterinary medicine, as it does in most businesses. Retail sales can suffer from a dirty, disorderly, and poorly maintained inventory. Proper restocking can save considerable time when retrieving items. This is especially true in treatment areas and ambulatory vehicles.

Reporting Low Inventory

The veterinary technician or office manager usually orders supplies. However, if you notice low inventory of supplies, report it to the proper person. Using a bulletin or dry-erase board is an effective method for everyone in the practice to record low inventory. Some practices use inventory control sheets or cards to record supplies stored and removed. Updating these cards each time supplies are removed is important.

Maintaining Supplies and Storage Areas

Certain areas of the clinic may require daily restocking. Supplies should always be accessible and orderly. Place frequently used items in easy to reach locations and infrequently used items on top or bottom shelves. Old supply or stock items should be used first. Place older items in front of newer items. Labeling shelves or compartments makes restocking easier. When restocking, it is very important to clean and dust. Damaged or expired supplies should be removed from inventory and replaced with new stock.

Test Your Knowledge: Complete the following activity sheet to test your knowledge and understanding of the materials you have studied in this lesson.

After you have completed the activity sheets, you may take the written evaluation for this unit. A score of at least 80 percent indicates you may proceed to the next unit.

Lesson 2: Maintaining and Restocking Inventory

Activity Sheet

1. What members of the veterinary team are responsible for reporting low inventory to the person who orders supplies?

   ____

2. List five steps you should include in the process of restocking inventory

   1. ____________________
   2. ____________________
   3. ____________________
   4. ____________________
   5. ____________________

Clinical/Laboratory Activities

1. Identify the person at the clinic responsible for ordering supplies.
2. Discuss with the appropriate person your responsibility for restocking and maintaining supplies throughout the clinic.
3. Learn the clinic's system for recording inventory.

Unit Checklist

Student Name ______________________ Overall Unit Rating ________

Activity Sheet: Filing Rating ________

Comments: ______________________

____

____

Activity Sheet: Maintaining Records Rating ________

Comments: ______________________

____

Activity Sheet: Maintaining and Restocking Inventory Rating ________

Comments: ______________________

____

____

Written Unit Evaluation Score ________

Additional Comments: ______________________

____

____

Teacher Signature ______________________ Date ________

Student Signature ______________________ Date ________

Unit IV

Animal Identification

This unit will help you to identify common breeds of small and large animals treated at veterinary practices. You will also learn appropriate terminology used to describe different animals.

Unit Lessons

Common Laboratory Animals

Common Dog and Cat Breeds

Common Ratites

Common Horse Breeds

Exotic Animals

Common Food Animals

Llamas and Alpacas

Lesson 1:
Common Laboratory Animals

Objectives:

A. Identify common breeds of lab animals treated.

B. Use species terminology appropriately.

Key Terms:

- Laboratory animal
- Pocket pets
- Pup
- Colony
- Boar
- Sow
- Buck
- Doe
- Kit
- Kindling

Being able to identify common laboratory animals seen in the veterinary practice is essential for the animal care assistant. This lesson discusses the physical characteristics, behaviors, and sounds of various laboratory animals. Appropriate terminology for rodents and rabbits is also provided.

Common Laboratory Animals

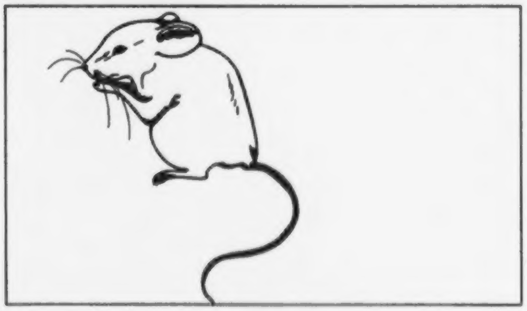
Laboratory animal medicine is the specialty of veterinary medicine that deals with the diagnosis, treatment, and prevention of disease in animals used as subjects for biomedical research. **Laboratory animal** is a very broad term encompassing rodents, rabbits, primates, canines, felines, swine, or any animal used for research purposes. The purpose of lab animal research is to obtain information about physiology or disease that will improve the quality of life for both humans and animals. For this lesson, the laboratory animals that will be discussed are rodents and rabbits which are also pets seen in veterinary clinics.

Pocket pets is a relatively new term used to describe small pets once only thought of as laboratory animals. Gerbils, hamsters, guinea pigs, mice, and rats are considered pocket pets because of their small size. Pocket pets have gained popularity in recent years with many first-time pet owners and owners with limited housing facilities.

Rodents

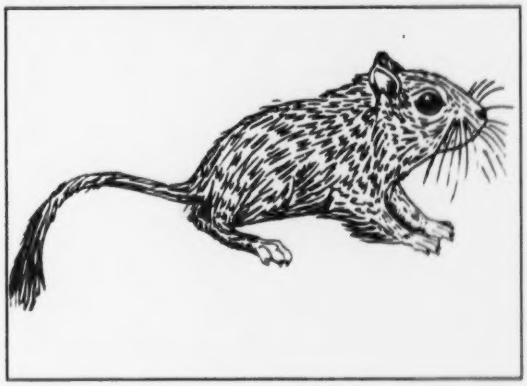
Mice are most frequently used in medical research because they reproduce rapidly, require minimum housing space and care, and have known genetics. All the teeth of rodents continue to grow throughout the lifetime of the animal. They have smooth hair, a hairless tail, round, erect ears, and protruding eyeballs. The average weight of a mouse is one ounce. A mouse's average life span is 1-2 years. A young mouse is called a **pup**. The average litter size for mice is 10 pups. A group of mice is referred to as a **colony**. A colony of mice can be noisy; as individuals, they are quiet. Figure 1.1 illustrates a mouse.

Figure 1.1 - Mouse



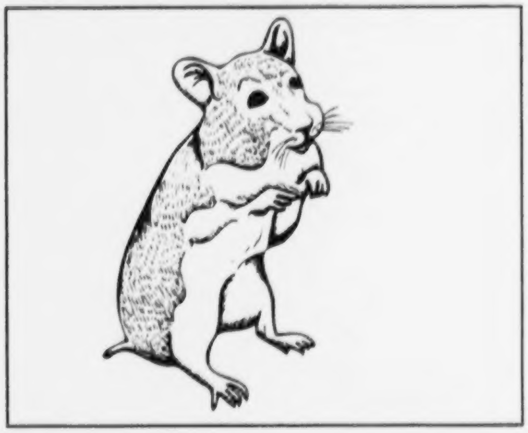
Gerbils have become popular pets because they are inquisitive, tame, clean, and almost odor-free. They are brown, black, or white, with medium-length fur. Their tails are haired with a long tuft on the end. The adult weighs 2-4 ounces; males are noticeably larger than females. The average life span of a gerbil is 2-4 years. Gerbils are monogamous; they mate for life. A young gerbil is also called a pup. The average litter size for gerbils is 4-7 pups. A group of gerbils is referred to as a colony. The only sound made by a gerbil is a faint "cheep." Figure 1.2 illustrates a gerbil.

Figure 1.2 - Gerbil



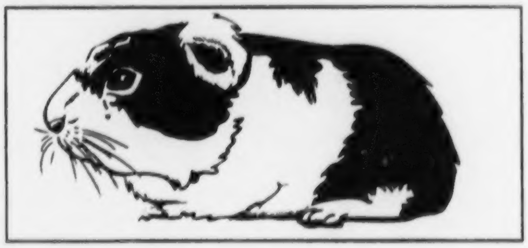
The hamster, famed for its cheek pouches, is an extremely popular pet. Frequent handling keeps them tame and happy. They have chunky bodies, short legs, short tails, and very loose skin covered with dense, soft, short fur. Adult hamsters weigh between 3-6 ounces, with the female being larger. The average life span of a hamster is 2-4 years. A distinguishing characteristic of the female is that she has three openings at the rear: anus, vulva, and urethra. A young hamster is called a pup. The average litter size for hamsters is 6-8 pups. Hamsters can be a variety of colors, depending upon the strain. The five most common hamster varieties include the teddy bear hamster (long-haired), Golden, Russian, Chinese dwarf, and the striped, hairy-footed dwarf. Hamsters are usually quiet; they only make a raspy shriek or squeaky noise when unhappy. Figure 1.3 illustrates a hamster.

Figure 1.3 - Hamster



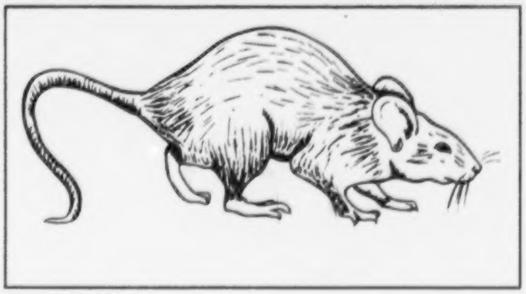
A guinea pig makes a pleasant pet because it seldom bites or scratches and cannot climb or jump. The adult guinea pig has a solid, dense, round body and can weigh as much as two pounds. A male guinea pig is called a **boar**, and a female is called a **sow**. A young guinea pig is called a pup. The average litter size for guinea pigs is four pups. Guinea pig neonates (newborn) are born fully furred with open eyes and are ready to eat solid food. There are four different varieties of guinea pigs. The English has smooth, short hair in a variety of colors. Abyssinian has various colors with swirls in the short, coarse hair. Peruvian has long, fine rag-mop type hair, and the Angora has long and silky hair. Guinea pigs are very vocal with purrs, whistles, and chirps. Figure 1.4 illustrates a guinea pig.

Figure 1.4 - Guinea Pig



Medical research uses millions of rats every year. Because of their intelligence, friendliness, and docile nature, they also make excellent pets. The rat's body is sleeker and more streamlined than that of the mouse. The adult weighs between 10-14 ounces and has an average body length of 8-10 inches. A male rat is called a **buck**, and a female rat is a **doe**. The male is larger than the female. The average life span of a rat is 2-3 years. A young rat is called a pup. The average litter size for rats is 8-10 pups. A group of rats is referred to as a colony. Rats will not make noise unless hurt or afraid. Figure 1.5 illustrates a rat.

Figure 1.5 - Rat

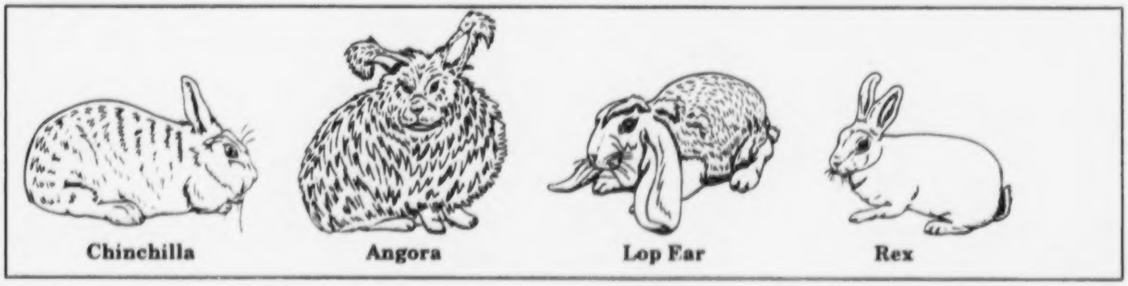


Rabbits

Rabbits are not only valued as lab animals and pets; they are also raised commercially for meat and fur. Many owners take pride in exhibiting and raising rabbits. Rabbits make good pets because they housebreak easily and seldom bite. A rabbit's teeth will continue to grow throughout its lifetime. They range in size from 2-16 pounds, depending upon the breed. Breeds fall into three categories of size: giant (14-16 pounds), medium (4-14 pounds), and small or dwarf (2-4 pounds). A male rabbit is called a buck; a female is called a doe. The average life span of a rabbit is 5-10 years. A young rabbit is called a **kit**; the average litter has 3-9 kits. **Kindling** is the term for rabbits giving birth. Kits only nurse once a day. Rabbits rarely make noise. When handling rabbits always support the hindquarters to prevent fracture of the spine.

There are more than 100 different breeds and varieties of rabbits. Rabbit breeds are separated into two groups, Fancy and Fur. Fancy rabbit breeds include the Angora, Belgian, Netherland Dwarf, Lop (long-eared), Dutch, Flemish, Himalayan, and Polish (to name just a few). The Fur breeds are divided by types of furs: normal, rex, and satin. Normal fur breeds have an undercoat with projecting guard hairs. The Argente, Beveren, Havana, New Zealand White, and Chinchilla are some of the normal fur breeds. Rex breeds have shorter guard hairs that are the same length of the undercoat. Rex breeds are different colors, such as Black, Blue, Havana, Lilac, Marten Sable, Tan, and Orange. The hair fibers in the satin breeds are altered from normal structures. Satin breeds include Argente and Rex rabbits with this type of hair fiber structure. Figure 1.6 illustrates different breeds of rabbits.

Figure 1.6 - Rabbits



Test Your Knowledge: Complete the following activity sheet to test your knowledge and understanding of the materials you have studied in this lesson.

Lesson 1: Common Laboratory Animals

Activity Sheet

1. List the five pocket pets described in this lesson and a characteristic for each one that distinguishes it from the rest.

   a. ____________________

   b. ____________________

   c. ____________________

   d. ____________________

   e. ____________________

2. What are three of the five most common varieties of hamsters?

   a. ____________________

   b. ____________________

   c. ____________________

3. What are two of the four most common varieties of guinea pigs?

   a. ____________________

   b. ____________________

4. What are the three size categories of rabbits?

   a. ____________________

   b. ____________________

   c. ____________________

5. Rabbits are divided into what two groups?

   a. ____________________

   b. ____________________

Match the terminology in column A to the corresponding animal(s) in column B. The terminology may apply to more than one animal. Provide the letter(s) for all animals that apply.

Column A	**Column B**
______ 6. Doe	a. Gerbil
______ 7. Kindling	b. Guinea Pig
______ 8. Sow	c. Hamster
______ 9. Pup	d. Mouse
______ 10. Boar	e. Rabbit
______ 11. Colony	f. Rat
______ 12. Buck	
______ 13. Kit	

Clinical/Laboratory Activities

1. Ask the veterinarian or veterinary technician about the pocket pets he or she has as patients. If the clinic is a small animal practice, find out which are the most common breeds and varieties of rodents and rabbits brought to the clinic.
2. If the clinic where you are working treats rodents or rabbits, ask the veterinarian or veterinary technician about the procedures or health problems common to these patients.
3. Search the Internet or library for information and photographs of rodents and rabbits.
4. Visit a pet store to see the different varieties of pocket pets being sold.

Lesson 2: Common Dog and Cat Breeds

Objectives:

A. Identify common dog breeds.

B. Identify common cat breeds.

C. Use species terminology appropriately.

Key Terms:

- Canine
- Bitch
- Stud
- Neutering
- Spaying
- Castration
- Purebred
- Mixed breed
- Feline
- Queen
- Tom
- Kittens

Dogs

Canine is the formal term that describes or refers to a dog or other member of the Family Canidae. Dogs continue to be the most widely-owned pet seen in veterinary clinics. A female dog is called a **bitch**, an unneutered male dog is a **stud**. Young dogs are called pups. **Neutering** is the term for removing a dog's reproductive organs. This term is also used for cats. In female animals neutering is called **spaying**, and in male animals it is called **castration**.

Common Dog Breeds

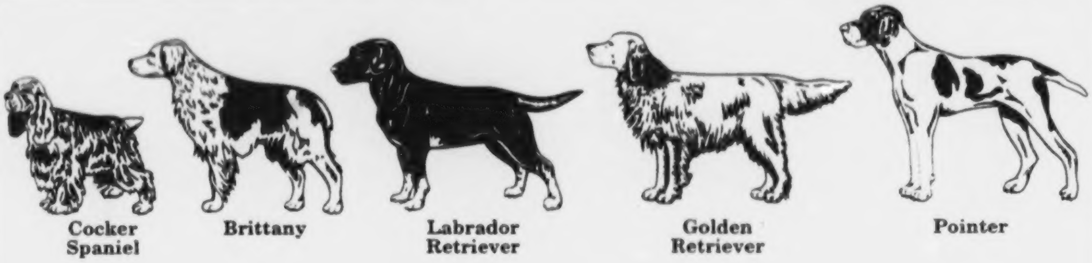
Canines are either **purebred**, the father and mother are of the same breed, or **mixed breed**, the father and mother are different breeds or of mixed origin. Most purebreds fall within the seven groups outlined by the American Kennel Club (AKC). The AKC groups breeds according to their purposes. The seven groups include sporting, hounds, non-sporting, terriers, toy, working, and herding.

Sporting group breeds were developed to hunt, point, or retrieve game birds. This group includes 24 breeds noted below.

American Water Spaniel
Brittany
Chesapeake Bay Retriever
Clumber Spaniel
Cocker Spaniel
Curly-Coated Retriever
English Cocker Spaniel
English Setter
English Springer Spaniel
Field Spaniel
Flat-Coated Retriever
German Shorthaired Pointer
German Wirehaired Pointer
Golden Retriever
Gordon Setter
Irish Setter
Irish Water Spaniel
Labrador Retriever
Pointer
Sussex Spaniel
Vizla
Weimaraner
Welsh Springer Spaniel
Wirehaired Pointing Griffon

The five most common sporting breeds are the Golden and Labrador Retrievers, Cocker Spaniel, Brittany, and Pointer. These common sporting breeds are illustrated in Figure 2.1.

Figure 2.1 - Common Sporting Breeds


Cocker Spaniel
Brittany
Labrador Retriever
Golden Retriever
Pointer

Hunting group breeds were developed to hunt other animals. Hounds are known for their ability to follow a trail using scent and their stamina. A unique characteristic of some hounds is the baying noise that they make. The hunting group includes 22 breeds.

Afghan Hound
Basenji
Basset Hound
Beagle
Black and Tan Coonhound
Bloodhound
Borzoi
Dachshund
Foxhound (American)
Foxhound (English)
Greyhound
Harrier
Ibizan Hound
Irish Wolfhound
Norwegian Elkhound
Otter Hound
Petit Basset Griffon Vendeen
Pharaoh Hound
Rhodesian Ridgeback
Saluki
Scottish Deerhound
Whippet

The five most common hounds seen in veterinary clinics include the Basset Hounds, Beagles, Dachshunds, Greyhounds, and various breeds of Coonhounds. These common hunting breeds are illustrated in Figure 2.2.

The non-sporting group includes 16 breeds. These dogs are pets and companions, although some breeds once worked and hunted.

Figure 2.2 - Common Hunting Breeds

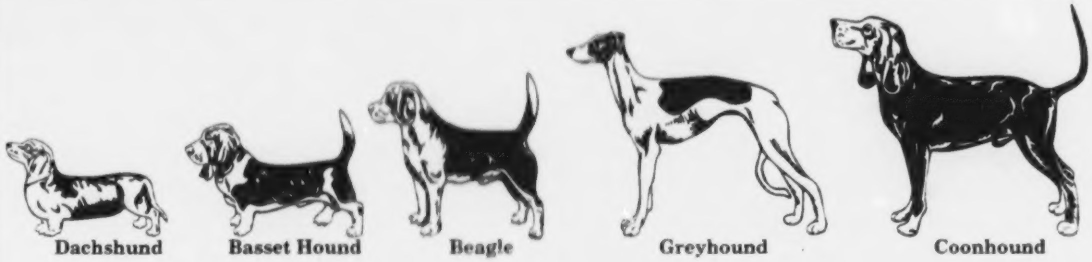
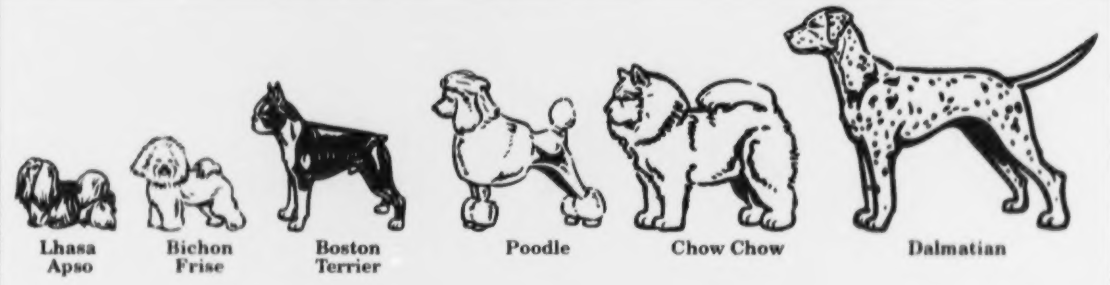

Dachshund
Basset Hound
Beagle
Greyhound
Coonhound

Figure 2.3 - Common Non-Sporting Breeds



American Eskimo Dog
Bichon Frise
Boston Terrier
Chinese Shar-pei
Chow Chow
Dalmatian
Bulldog
French Bulldog
Finnish Spitz
Keeshond
Lhasa Apso
Poodle (Standard & Miniature)
Schipperke
Shiba Inu
Tibetan Spaniel
Tibetan Terrier

Many of today's most popular breeds are from this group. These include the Bichon Frise, Boston Terrier, Chow Chow, Dalmatian, Lhasa Apso, and Poodle. These common non-sporting breeds are illustrated in Figure 2.3.

The terrier group breeds were developed to work on farms to exterminate rats and other rodents. This group comprises 25 very different breeds.

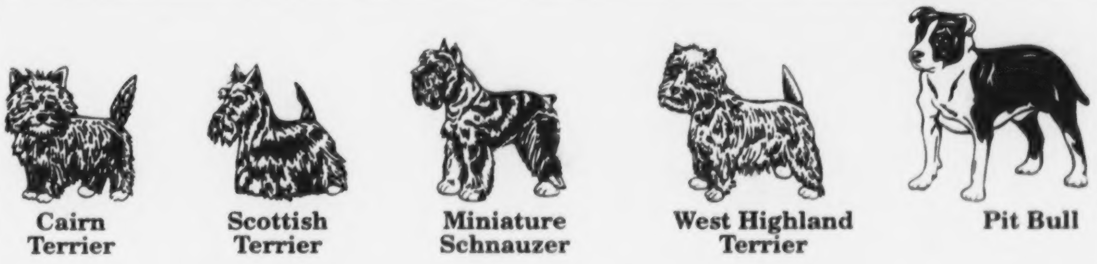
Airedale Terrier
American Staffordshire Terrier (Pitbull)
Australian Terrier
Bedlington Terrier
Border Terrier
Bull Terrier
Cairn Terrier
Dandie Dinmont Terrier
Fox Terrier (Smooth)
Fox Terrier (Wire)
Irish Terrier
Kerry Blue Terrier
Lakeland Terrier
Manchester Terrier (Standard)
Miniature Bull Terrier
Miniature Schnauzer
Norfolk Terrier
Norwich Terrier
Scottish Terrier (Scottie)
Sealyham Terrier
Skye Terrier
Soft Coated Wheaten Terrier
Staffordshire Bull Terrier
Welsh Terrier
West Highland White Terrier (Westie)

The five most common terrier breeds seen in veterinary clinics include Cairn Terriers, Miniature Schnauzers, Scotties, Westies, and Pitbull Terriers. These common terrier breeds are illustrated in Figure 2.4.

The toy group breeds were developed purely to be companions and pets. Nineteen of the world's smallest breeds make up this group.

Affenpinscher
Brussels Griffon

Figure 2.4 - Common Terrier Breeds


Cairn Terrier
Scottish Terrier
Miniature Schnauzer
West Highland Terrier
Pit Bull

Cavalier King Charles Spaniel
Chihuahua
Chinese Crested
English Toy Spaniel
Italian Greyhound
Japanese Chin
Maltese
Manchester Terrier (Toy)
Miniature Pinscher
Papillon
Pekingese
Pomeranian
Poodle (Toy)
Pug
Shih Tzu
Silky Terrier
Yorkshire Terrier (Yorkie)

The popularity of toy breeds makes them commonplace in the veterinary clinic. Chihuahuas, Pomeranians, Pugs, Shih Tzus, Toy Poodles, and Yorkies are most common. These common toy breeds are illustrated in Figure 2.5.

Working group breeds serve as guard, watch, police, rescue, and sled dogs. This group includes 20 breeds, some of which are among the largest dogs in the world.

Akita
Alaskan Malamute
Bernese Mountain Dog
Boxer
Bullmastiff
Doberman Pinscher
Giant Schnauzer
Great Dane
Great Pyrenees
Greater Swiss Mountain Dog
Komondor
Kuvasz
Mastiff
Newfoundland
Portuguese Water Dog
Rottweiler
Saint Bernard
Samoyed
Schnauzer (Standard)
Siberian Husky

Figure 2.5 - Common Toy Breeds

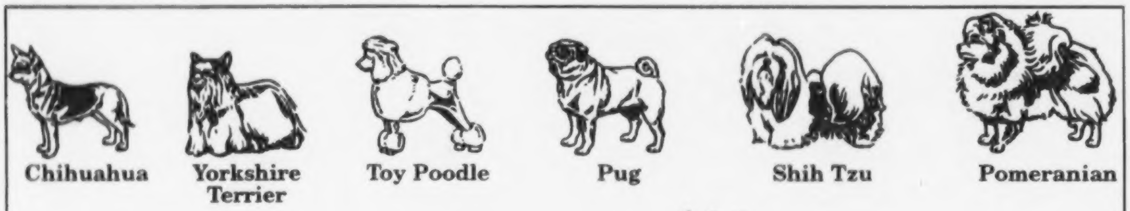
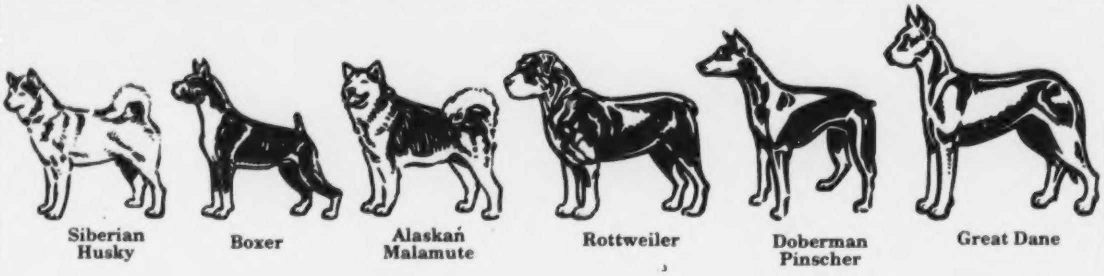

Chihuahua
Yorkshire Terrier
Toy Poodle
Pug
Shih Tzu
Pomeranian

Figure 2.6 - Common Working Breeds


Siberian Husky
Boxer
Alaskan Malamute
Rottweiler
Doberman Pinscher
Great Dane

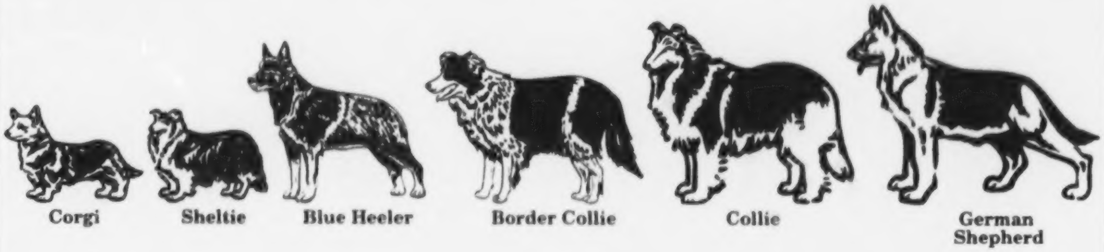
The most common working breeds are Alaskan Malamutes, Boxers, Doberman Pinschers, Great Danes, Rottweilers, and Siberian Huskies. These common working breeds are illustrated in Figure 2.6.

Herding group breeds were developed to herd and protect flocks from predators. This group includes 16 breeds of guardians and drovers.

Australian Cattle Dog (Heeler)
Australian Shepherd
Bearded Collie
Belgian Malinois
Belgian Sheepdog
Belgian Tervuren
Border Collie
Bouvier Des Flandres
Briard
Collie (Rough and Smooth)
German Shepherd Dog
Old English Sheepdog
Puli
Shetland Sheepdog (Sheltie)
Welsh Corgi (Cardigan)
Welsh Corgi (Pembroke)

Commonly seen in veterinary practice are Heelers, Border Collies, Corgis, Collies, German Shepherds, and Shelties. These common herding breeds are illustrated in Figure 2.7.

Figure 2.7 - Common Herding Breeds


Corgi
Sheltie
Blue Heeler
Border Collie
Collie
German Shepherd

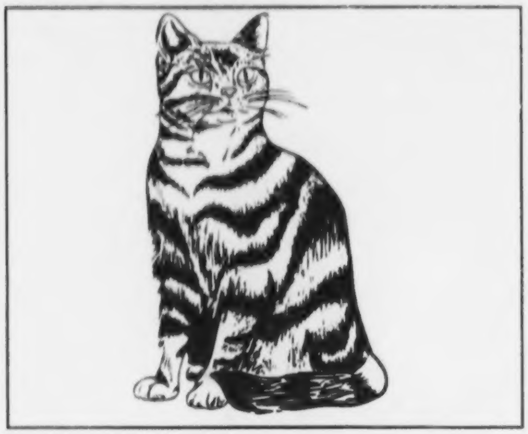
Cats

Feline is the formal term that describes or refers to a cat or other member of the Family Felidae. Until recent decades, few domestic cats were kept as pets. Most cats spent their lives on farms or in cities where they depended upon their ability to kill rodents, steal, or beg for food. Today, cats are independent, loving, and fairly self-sufficient. They require less training than dogs and adapt well to most housing situations. These qualities make cats excellent companions. A female cat is called a **queen**, a male cat is a **tom**. Young cats are called **kittens**.

Common Cat Breeds

The majority of cats seen in veterinary practice are not purebred. Cats of mixed or unknown ancestry are called domestic shorthair (DSH) and domestic longhair (DLH). Figure 2.8 illustrates a DSH.

Figure 2.8 - Domestic Shorthair



Individual cats are most often identified by their coloring. Cat fur can be a variety of colors and patterns. Pattern descriptions include solid, shaded (white undercoat with colored hair tips), smoke (white undercoat with color extending down the hair shaft), tabby (striped or mottled), and parti-colored (white mixed with another color). Color varieties include black, white, gray (blue), red (orange, marmalade, or ginger), cream, and brown. Calico cats are white with two or more colors. Tortoiseshell cats or torties have a mix of red, black, and cream patches.

Cats were not classified as purebred or pedigree until nearly a century ago when cat shows were started in Europe. Countries now have established associations that determine recognized breeds. In the United States, the Cat Fanciers' Association, Inc. (CFA) recognizes 34 different pure breeds. Purebred cats can be divided into five basic categories: Persians, other long-haired cats, British shorthairs, American shorthairs, and Oriental shorthairs. These categories can be grouped into short-haired and long-haired cats.

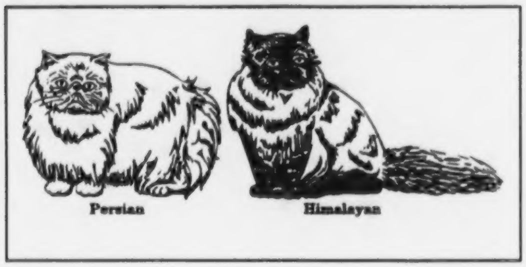
Long-haired cats may have developed as a result of living in cold environments. Most of the long-haired breeds were brought to Britain from Turkey and Persia in the late 19th century.

Balinese, Birman, Maine Coon, Persian, Somali, and Turkish Angora are long-haired breeds. The CFA includes the Himalayan and Kashmir in the Persian category.

The most commonly seen purebred long-haired cats in veterinary practices are the Persian and Himalayan. The Persian cat has a short and blocky body, a massive head with large, expressive eyes, and a short, broad, snub nose. Persians have long, flowing hair that may be solid, shaded, smoke, tabby, or parti-colored. Himalayan cats are Persian cats with Siamese points. Figure 2.9 illustrates a Persian and a Himalayan.

CFA recognizes many breeds of short-haired cats, which are divided into four

Figure 2.9 - Persian and Himalayan



groups (natural breeds, hybrids, established breeds, and mutations). Natural breeds are cats native to certain geographical areas. These cats include the Abyssinian, American Shorthair, British Shorthair, Mau, Japanese Bobtail, Korat, Manx, Russian Blue, and Siamese. Hybrids result from crossbreeding two or more natural breeds. These cats include the Bombay, Colorpoint Shorthair, Exotic Shorthair, Oriental Shorthair, and Tonkinese. Established breeds such as the Burmese and Havana Brown, a solid-colored brown cat, are created to meet ideal characteristics. Mutations are cats bred for unusual genetic features. These cats include the Cornish Rex and Devon Rex which have curly red and white coats, and the Scottish Fold, which has folded ears.

The most commonly seen purebred short-haired cats in veterinary practices are the Siamese, and Manx. The Siamese cat is a medium-sized, graceful, and muscular cat. It has short, fine hair and blue eyes. The distinguishing characteristic is its light body color with point colors, which are darker markings on the extremities including its face, ears, feet, and tail. Point colors are the result of a gene that is sensitive to temperature. Figure 2.10 illustrates a Siamese.

The Manx is a medium-sized, high-rumped (hind legs are longer than front legs), tailless cat. It has a short, thick coat. The absence of a tail is due to a mutated dominant gene. Cats born without tails are often called "rumpies." Cats with a few tail vertebrae are called "rumpy risers." Cats born with a tail stump are called "stumpies." Figure 2.11 illustrates a Manx.

Test Your Knowledge: Complete the following activity sheet to test your knowledge and understanding of the materials you have studied in this lesson.

Figure 2.10 - Siamese

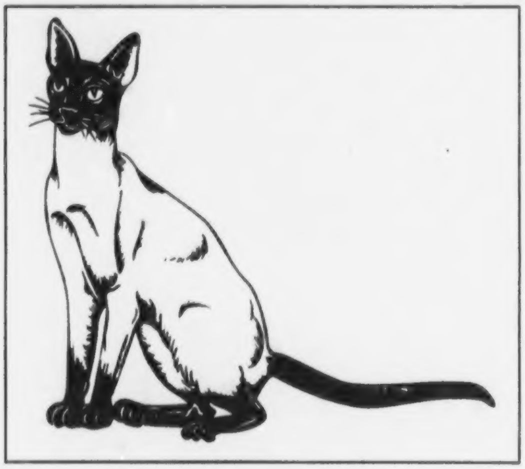
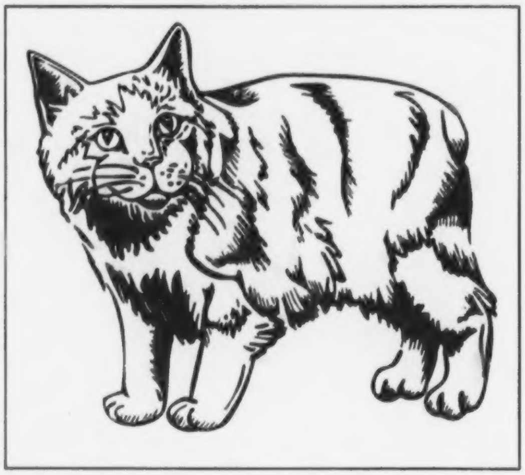


Figure 2.11 - Manx



Lesson 2: Common Dog and Cat Breeds

Activity Sheet

1. List two breeds of dogs from each of the seven AKC groupings described in this lesson.

Sporting:

a. ______________________________

b. ______________________________

Hound:

a. ______________________________

b. ______________________________

Non-sporting:

a. ______________________________

b. ______________________________

Terriers:

a. ______________________________

b. ______________________________

Toy breeds:

a. ______________________________

b. ______________________________

Working:

a. ______________________________

b. ______________________________

Herding:

a. ____________________

b. ____________________

2. What is the most common kind of cats seen in veterinary practice?

____

____

3. List the most common purebred cats seen in veterinary practice.

a. ____________________

b. ____________________

c. ____________________

d. ____________________

4. Which breed of cat is tailless?

____

5. Define neutering and spaying.

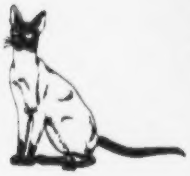
____

____

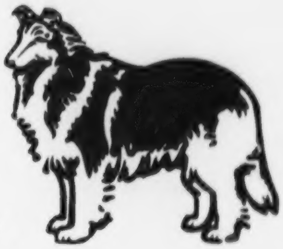
____

____

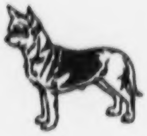
6. Write the breed name under the following dog and cat illustrations.



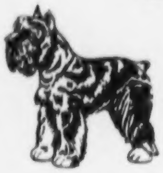
a. ____________



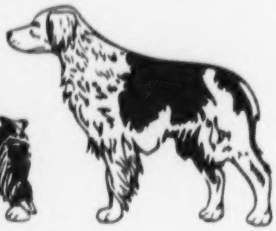
b. ____________



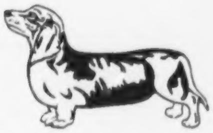
c. ____________



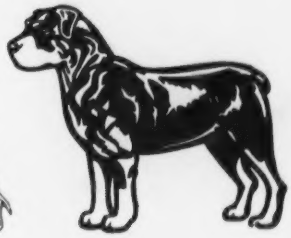
d. ____________



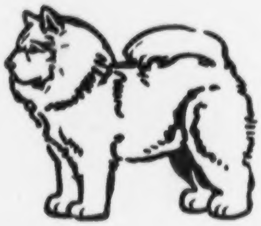
e. ____________



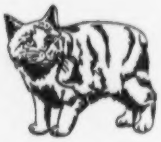
f. ____________



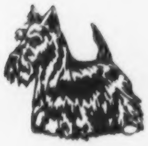
g. ____________



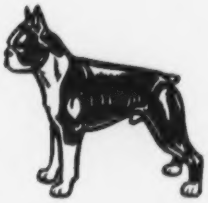
h. ____________



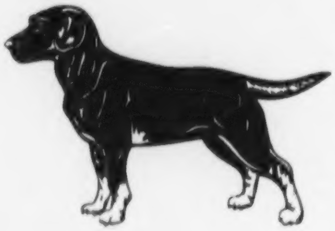
i. ____________



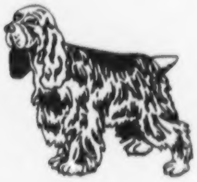
j. ____________



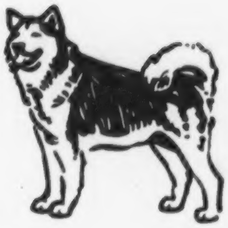
k. ____________



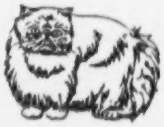
l. ____________



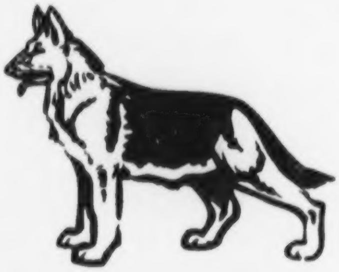
m. ____________



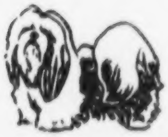
n. ____________



o. ____________



p. ____________



q. ____________

Clinical/Laboratory Activities

1. Search on the Internet or at the library for information and photographs of different dog and cat breeds. The American Kennel Club is located at http://www.akc.org and the Cat Fanciers' Association is at http://www.fanciers.com
2. Ask the veterinarian or veterinary technician which are the most common purebred dogs and cats treated at the clinic.
3. Find out how mixed breed cats and dogs are identified at the clinic. How are mixed breeds identified in the animal records?
4. Ask the veterinarian or veterinary technician about health problems that are more common in certain breeds of dogs and cats.
5. Attend a dog or cat show if one is held in your community.

Lesson 3:

Common Ratites

Objectives:

A. Identify common ratites treated (ostrich, emu, and rhea).

B. Use proper species terminology.

Key Terms:

- Ratites
- Roosters
- Hens
- Chicks
- Hatching
- Incubator

Ratites

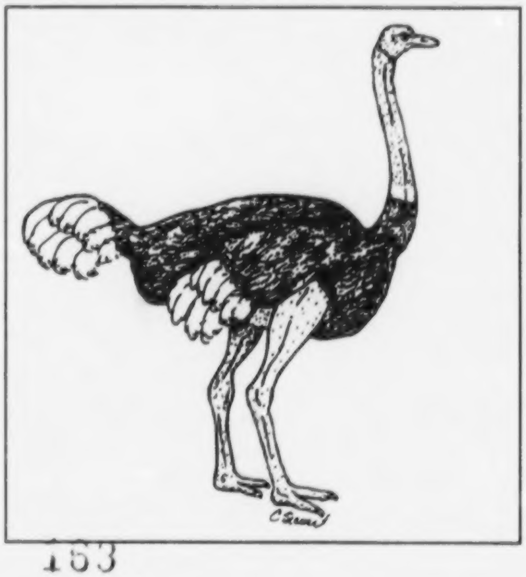
Ratites are large, flightless birds with small wings. Unlike flying birds, they have flat breast bones without a keel (a ridge) on the sternum. It is the lack of a keel that gives these birds their name. There are five different groups of ratites: ostrich, emu, rhea, cassowary and kiwi. For this lesson only the ostrich, emu, and rhea, which are the most common in the United States, will be discussed. **Roosters** are male ratites, and **hens** are female ratites. Young ratites are called **chicks**.

Ratite production in the United States started in the 1980s and plenty is still to be learned about raising ratites. The popularity and price sky-rocketed in the years 1989-1994, with the peak being 1993-1994. The ostrich, emu, and rhea are raised for their meat; a red meat that is very low in fat and cholesterol. Ratites are 95 percent useable, providing many useful by-products. Their hides are tanned into leather. Ratite feathers are used for decoration and ornamental purposes. Because feathers are static free, they are also used in electronic manufacturing and the automotive industry to clean and dust vehicles before painting. Emu and rhea oils are used in cosmetics and are being researched for their therapeutic qualities.

Common Ratites

Ostriches are native to Southern Africa. Figure 3.1 illustrates an ostrich. Adult female ostriches have gray feathers, while the males have black feathers with white wing-tip feathers. Female ostriches can weigh from 200-350 pounds, and the males will weigh 230-400 pounds. Ostriches can be 7-10 feet tall, have two toes, and large wings. Ostriches require daily exercise to prevent leg and digestive problems. The life span of ostriches can be 65-75 years. The egg-laying season for ostriches is from January to October. Ostriches lay cream-colored eggs every other day. The average incubation time for an ostrich egg is 42 days. One ostrich egg is equal to two dozen chicken eggs. After ratites lay eggs, the producers collect the eggs and put them in an incubator to hatch. **Hatching**

Figure 3.1 - Ostrich



is when a young ratite breaks out of an egg. An **incubator** provides an artificial means of controlling temperature, humidity, and ventilation during egg development. Ostrich chicks average 2 pounds in size and are 10 inches tall.

Emus are native to Australia. Both the male and female emus have dark brownish gray hairlike plumage with darker feather tips. Emus are smaller than ostriches, weighing from 80-150 pounds. Unlike ostriches, the female is larger than the male. Emus can be 5-6 feet tall, have three toes, and short stubs for wings. The average life span of an emu is 35 years. The egg-laying season for the emu is from November to April. Emus lay 30 eggs a year. They lay avocado green eggs every third day. The average incubation time for an emu egg is 52 days. Emu chicks are 6-8 inches tall at birth. Figure 3.2 illustrates an emu.

Rheas are native to South America. They have brown plumage with white flecking. Rheas range in size from 60-100 pounds with the male being larger than the female. Rheas can be 4-5 feet tall, have three toes, and large wings. The average life span of a rhea is 20 years in the wild and 40 years in captivity. They lay light green colored eggs from May to August, laying every 2-4 days. The average incubation time for a rhea egg is 35 days. Figure 3.3 illustrates a rhea.

Test Your Knowledge: Complete the following activity sheet to test your knowledge and understanding of the materials you have studied in this lesson.

Figure 3.2 - Emu

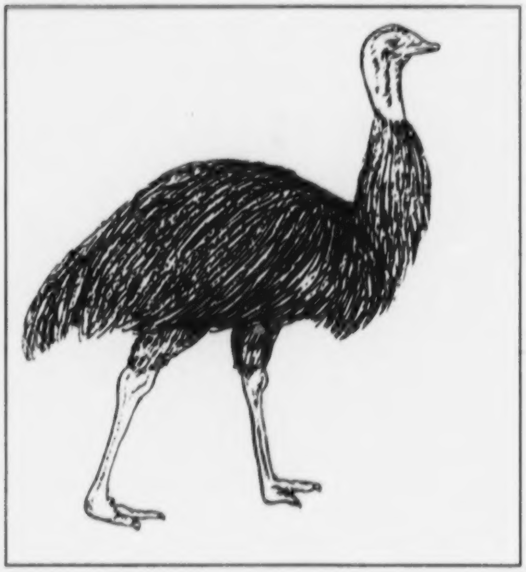
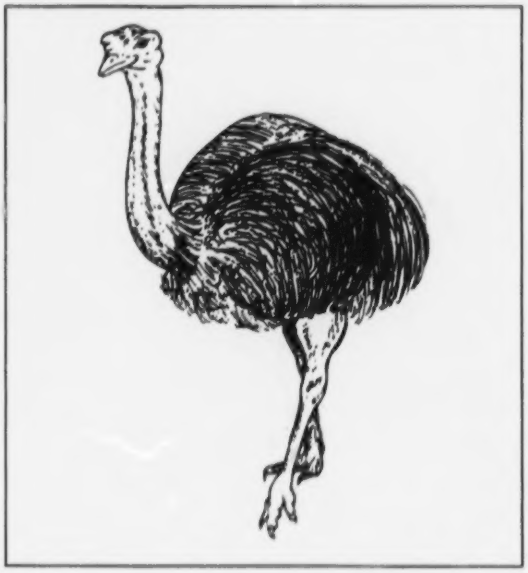


Figure 3.3 - Rhea



Lesson 3: Common Ratites

Activity Sheet

1. Define ratite.

2. On what continent did each of the following ratites originate: ostriches, emus, and rheas?

3. Which ratites have short stubs for wings?

4. What color are rheas?

5. What is the quickest way to tell the adult male ostrich from the female?

6. Fill in the correct terms for the following:

   Male ratite:

   Female ratite:

   Young ratite:

7. What is an incubator?

Clinical/Laboratory Activities

1. If you are working at a large animal practice that treats ratites, ask the veterinarian or veterinary technician about the most common health problems, treatments, and procedures for these patients.

2. Research on the Internet or at the library for information on ratite farming and write a report about the current popularity of this market. If a ratite farm is being operated near you, contact the farmer and ask to visit.

3. If ratite farming is not accessible to you, visit a local zoo to see and learn more about ostriches, rheas, emus, and other ratites.

Lesson 4:
Common Horse Breeds

Objectives:

A. Identify common horse breeds.

B. Use species data and terminology.

Key Terms:

- Equine
- Mare
- Stallion
- Stud
- Gelding
- Foaling
- Foal
- Filly
- Colt
- Weanlings
- Yearlings
- Withers
- Hands
- Draft breeds
- Light breeds
- Chestnut
- Sorrel
- Flaxen
- Bay
- Roan
- Overo
- Tobiano
- Tovero
- Palomino
- Dun
- Buckskin
- Ponies
- Hybrid
- Jack
- Dam
- Sire

Horses

Equine is the formal term that describes or refers to a horse or member of the horse family. The average life span for a horse is 25-30 years. A **mare** is a female horse of breeding age. The preferred term for a breeding age male horse is **stallion**, but he may also be called a **stud**. A **gelding** is a castrated male horse. When a mare gives birth, it is called **foaling**. A **Foal** is also the term for a young horse regardless of gender. Normal offspring for a horse is one foal, rarely twins. A female horse less than two years of age is called a **filly**. A male horse less than two years of age is a **colt**. Horses are referred to as **weanlings** from 6-12 months of age and **yearlings** from 1-2 years of age. The height of a horse is measured from the ground to the **withers**, the high point or top of the shoulders, in units called **hands**. One hand equals 4 inches.

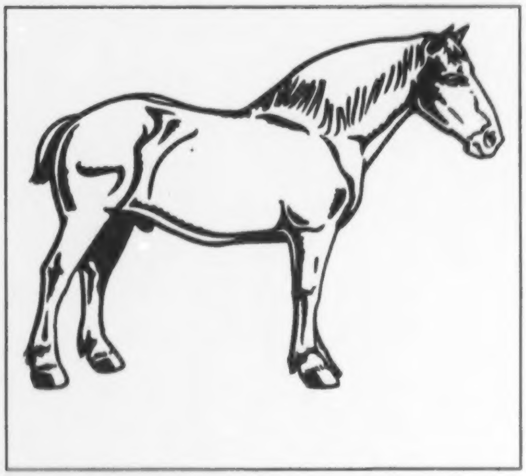
Common Horse Breeds

Horses were the mainstay of veterinary practice for many generations. Carriage and work horses were the most common animals treated by veterinarians. Modern farming techniques and automobiles dramatically reduced the number of these types of horses. Today most horses are kept for pleasure, hobby, or breeding. We have divided the most common horse breeds into two groups; the **draft breeds** are large horses bred for heavy work; and the **light breeds** are bred for ranch and cattle work, racing, and pleasure. Horses are classified according to weight, size, and build.

Draft Breeds

Belgium is the original home for the Belgian. These quiet, determined, gentle giants are favorites among draft horse enthusiasts. They are the most popular of all the draft breeds. Most Belgians in this country are a reddish-brown color called **chestnut** or a red color that is lighter than chestnut called **sorrel**. Their manes and tails are a pale, soft straw color referred to as **flaxen**. The average Belgian is 16 hands tall; mature stallions can be 15-17 hands. Belgians may weigh 1,900-2,200 pounds. They are still used to farm, pull, log, and exhibit. Figure 4.1 illustrates a Belgian.

Figure 4.1 - Belgian



Clydesdales are originally from Scotland, along the River Clyde. The Clydesdale is renowned for its superior style, long stride, animated action, and the fine feathering hair on its legs. They are predominantly **bay**, brown with black tail and mane, or **roan**, a base color of red, brown, or black that is muted or lightened with a mixture of white hairs. They also have white facial or leg markings. Clydesdales are the second tallest draft breed; most average between 16.2-17.2 hands. They may weigh 1,700-1,900 pounds. The Anheuser-Busch brewery's team of Clydesdales is the most famous hitch of harnessed horses in the world. Clydesdales are used mostly for exhibition purposes rather than farming.

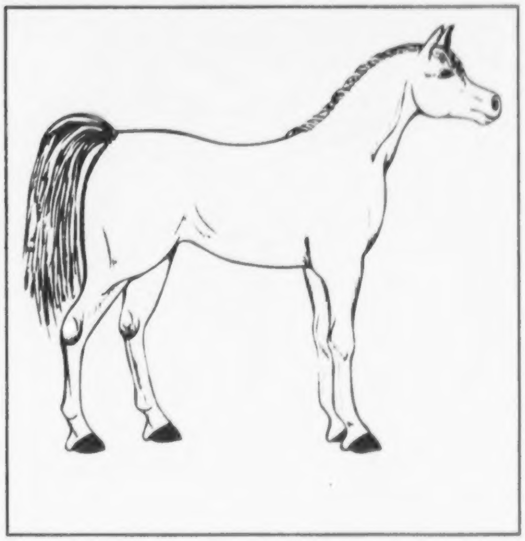
Le Perche, France, is the homeland of the Percheron. Past generations of coach drivers preferred the Percheron to other breeds because of its coloring. Some liked the black color because the coat seldom required cleaning, others preferred the gray color because it was more visible at night. Gray Percherons are born black and turn gray as they mature. The average size of Percherons today is 16.1-16.3 hands tall, weighing 1,900-2,100 pounds. The Percheron's head is handsome and clean cut when compared to its draft cousins. Percherons are still working on farms in rural areas, pulling carriages in large cities, and being shown in hitch and halter classes.

The east central counties of Lincolnshire and Cambridgeshire, England, were once the exclusive home of the Shire, the largest draft breed. This majestic horse is noted for the heavy feathering on its legs. It is often more than 17.2 hands tall and weighs more than 2,300 pounds. Most Shires are black or bay with extensive white leg markings. They are used primarily for exhibition and farming.

Light Horse Breeds

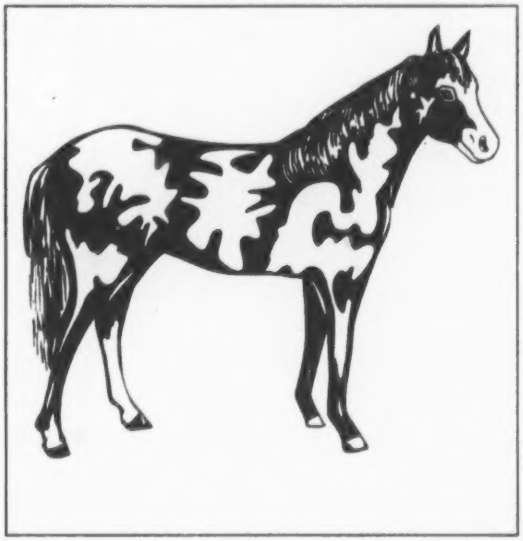
Arabians originated in ancient Arabia. The Arabian is one of the oldest purebred breeds of horse in the world. Many of today's breeds can trace their lineage to this breed. Arabians may be gray, chestnut, bay, roan, or black. They have refined heads, with dished faces, wide-set eyes, short backs with one less vertebra than other breeds, docile temperaments, great endurance, and a floating movement or gait. The average size of an Arabian is between 14.2-15.2 hands tall, weighing between 800-1,000 pounds. They are used primarily for show, pleasure, and endurance riding. Figure 4.2 illustrates an Arabian.

Figure 4.2 - Arabian



The American Paint Horse breed was developed in the United States by the crossbreeding of American Quarter Horses or Thoroughbreds with spotted ranch-type horses. Figure 4.3 illustrates an American Paint Horse. Paints have several coat patterns, **overo**, **tobiano,** and **tovero.** Overos have irregular patches of white on any other base color. Their legs are the same color as the base and makes them appear to be splashed with white from the belly up. Tobianos have white across the top line extending downward in a clearly marked pattern, usually with the white legs. Tovero patterns possess characteristics of both the overo and tobiano coat patterns. The base color may be black, bay, brown, chestnut, sorrel, gray, or roan. An American Paint Horse may also have a base color **palomino**, a pale cream to gold color with flaxen or white manes, or **dun** or **buckskin**, a yellowish brown coat with black mane and tail. The average height ranges from 14.2-16 hands. American Paint Horses are primarily stock, pleasure, racing, and show horses.

Figure 4.3 - American Paint Horse

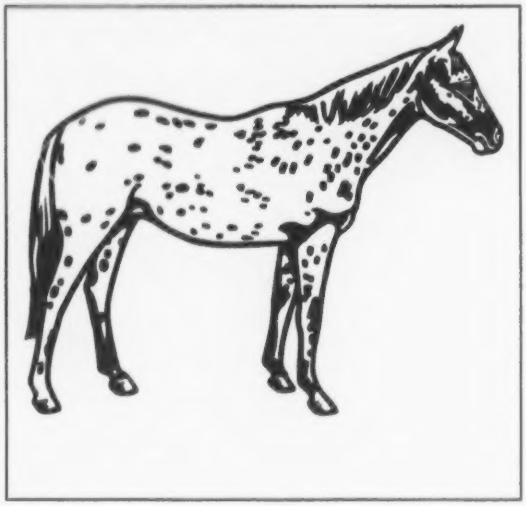


Palomino is also a color breed registry available to horses of different breeds that are light to dark gold in color with white manes and tails. Palominos must stand from 14-17 hands tall and have no more than 15 percent of a darker color hair mixed in their manes or tails. Buckskin or Dun is also the name of a distinct breed of horse. These yellowish brown horses have black manes and tails with a dark dorsal line running along the length of their backs.

American Saddlebred horses were originally bred in Fayette County, Kentucky. Saddlebreds are noted for their animated gaits including the walk, trot, slow-gait, canter, and rack, as well as their long, graceful necks and elegant style. This breed is trained to use a slow-gait, a four-beat, single-footed pace in which each foot comes down singly, and a rack, a fast, flashy, four-beat gait in which each foot hits the ground separately at equal intervals. Saddlebreds are usually dark colors such as black, bay, or chestnut and occasionally are gray or roan. Saddlebreds are most often seen in the show ring. However, they are gaining popularity as pleasure and stock horses.

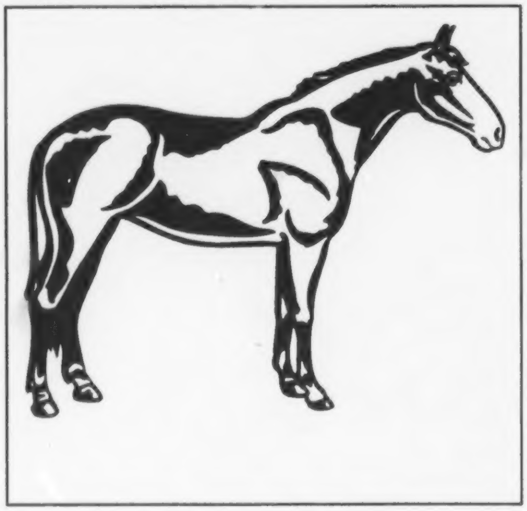
The Nez Perce Indians of Oregon, Washington, and Idaho developed the colorful Appaloosa breed. Their name is derived from the Palouse River of the Pacific Northwest. Distinct characteristics including mottled skin, black, vertically striped hooves, and a coat pattern with small spots. Appaloosa base coats may be white, black, bay, brown, chestnut, dun, buckskin, sorrel, gray, roan, or palomino. Their height ranges from 14-16 hands. Appaloosas make wonderful pleasure, stock, and show horses. Figure 4.4 illustrates an Appaloosa.

Figure 4.4 - Appaloosa



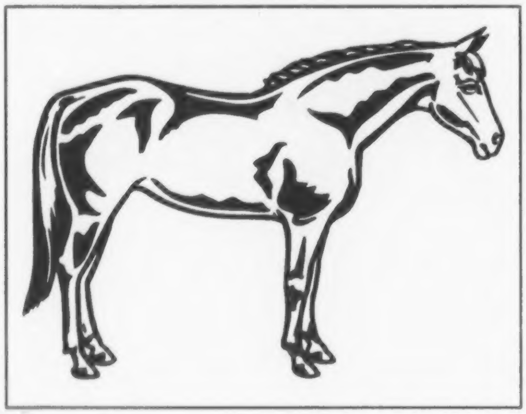
The Ozark Hills of Missouri and Arkansas are the birthplace of the Missouri Fox Trotter. Their head-bobbing, slow, short, broken-type trot makes them popular show, pleasure, and trail riding horses. The Fox Trotter gait is very smooth and comfortable for the rider. The horse can maintain this gait for extended periods with little fatigue. Fox Trotters are 14-16 hands tall and are usually black, bay, chestnut, roan, gray, or palomino. White markings on the legs and head are also common. Figure 4.5 illustrates a Fox Trotter.

Figure 4.5 - Fox Trotter



The American Quarter Horse is the world's most popular breed. Originating in the United States, no breed is faster in the quarter mile. Figure 4.6 illustrates a Quarter Horse. Their popularity is due to their versatility, easy training, and good looks. Quarter Horses can be bay, black, brown, chestnut, dun, sorrel, palomino, buckskin, gray, or roan. Most have white markings on their legs and faces. Too much white can make the horse ineligible for Quarter Horse registration. Quarter Horses must be at least 14.2 hands tall;

Figure 4.6 - Quarter Horse

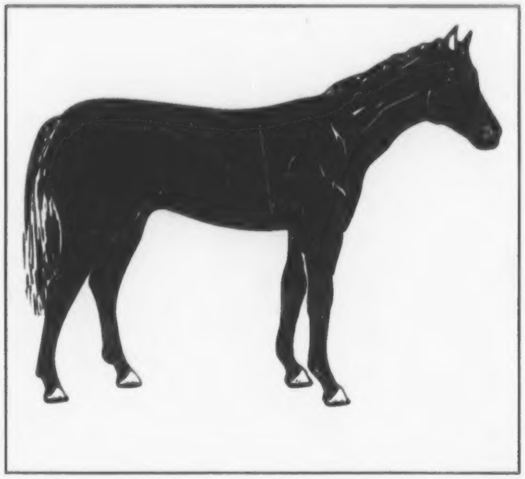


the majority are between 14.2-16.2 hands tall. Quarter Horses are ranch, stock, show, race, and pleasure horses.

The Tennessee Walking Horse was developed in Tennessee as a plantation walking horse. This horse is noted for its characteristic gait called a running walk. It is a slow, four-beat gait in which the hind foot over steps the front foot by as much as 24 inches. This gait is comfortable for both horse and rider. Walking Horses can be a variety of colors including brown, black, bay, chestnut, roan, palomino, white, or gray. Most Walking Horses are 15 hands tall, but may range from 14.2-16.2 hands. Most Tennessee Walking horses are used today for showing, pleasure, and trail riding.

Many modern breeds can trace their ancestry back to the Thoroughbred. Figure 4.7 illustrates a Thoroughbred. Thoroughbreds are famed as race horses, but they are also excellent hunter/jumpers and show horses. Hunter/jumpers are horses that can jump obstacles either in steeple racing, hunting, or jumping competitions. They also compete in dressage, an execution of complex movements in response to barely perceptible signals from their riders. Thoroughbreds have been selectively bred for more than 250 years and trace their lineage to three Arabian stallions exported to England. Documented pedigrees have been maintained for more than 200 years. Thoroughbreds are tall horses compared to other light breeds. The average height of a Thoroughbred is more than 16 hands. Many are more than 17 hands tall. Thoroughbreds are predominately dark colors, such as bay, brown, black, and chestnut; a rare Thoroughbred may be gray.

Figure 4.7 - Thoroughbred



Ponies

Ponies are smaller versions of standard breeds and maintain the distinct body shape or form of the original breed of light horse. Ponies are less than 14.2 hands tall and weigh 500-900 pounds. In miniature, their shape is either of a draft horse or saddle horse. Common pony breeds include the Shetland Pony, the Hackney, and the Welsh Pony. Because of their small size, the Shetland and Welsh Ponies are good riding mounts for children. They can also be harnessed, usually for exhibition. The Hackney Pony is used mostly for driving.

Miniature Horses

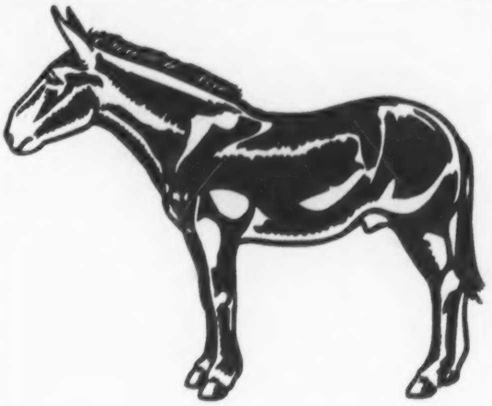
Miniature Horses are not considered ponies by their breeders. Their shape should resemble that of a horse. There are two divisions within the miniature horse registry; the first division includes horses under 29 inches in height and the second includes horses from 19-36 inches in height. Miniatures can be any color, including spotted and Appaloosa coat patterns.

Hybrids

A mule is a **hybrid**; its parents are of different species. They are the offspring of a male donkey called a **jack** and a female horse. Mules are sterile, although rare reports exist of mules reproducing. Mules range in size from 6-16 hands tall. Mules can be any color. A mule's size is dependent upon the size of its mother, also called its **dam**. A mule's father is called its **sire**. Mules are used for exhibition, packing, farming, pleasure, and trail riding. Figure 4.8 illustrates a mule.

Test Your Knowledge: Complete the following activity sheet to test your knowledge and understanding of the materials you have studied in this lesson.

Figure 4.8 - Mule



Lesson 4: Common Horse Breeds

Activity Sheet

1. List three draft breed horses.

   a. ______________________________

   b. ______________________________

   c. ______________________________

2. List three light horse breeds.

   a. ______________________________

   b. ______________________________

   c. ______________________________

3. Hands are units of measurement used for determining a horse's height. How many inches equal one hand?

   ____

4. Describe the following coat colors or patterns:

   Palomino:

   Sorrel:

   Bay:

   Chestnut:

   Overo:

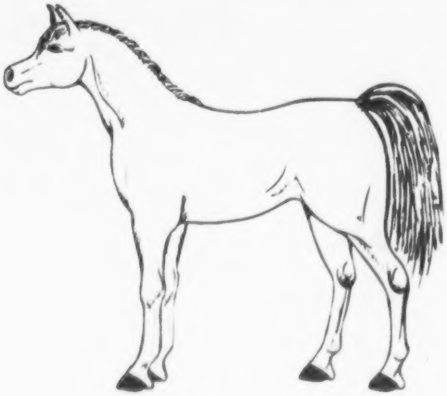
   Roan:

   Tobiano:

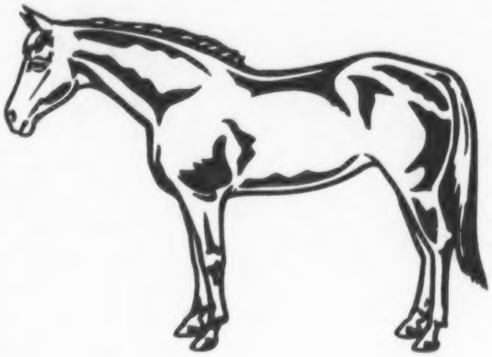
   Buckskin or dun:

   Tovero:

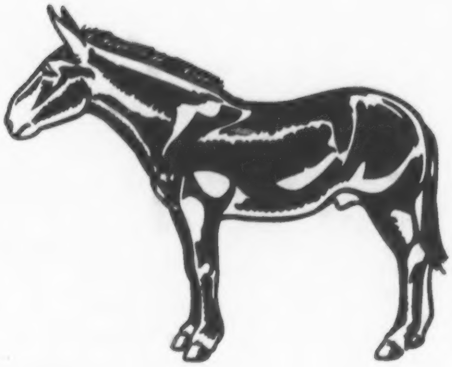
5. Label the following illustrations with the appropriate breed name.



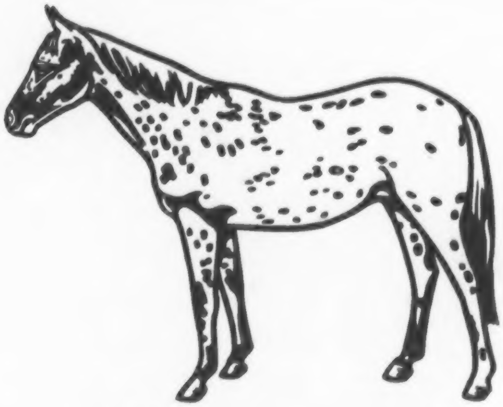
a. ____________________



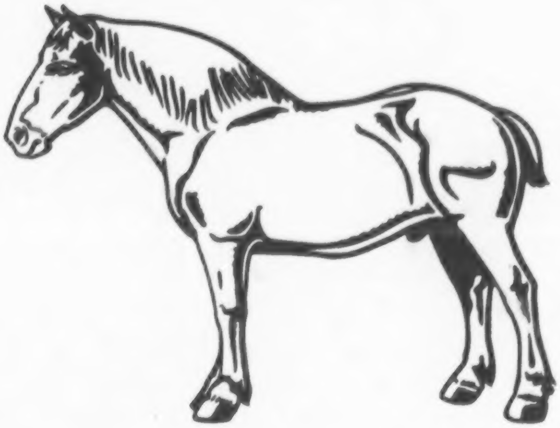
b. ____________________



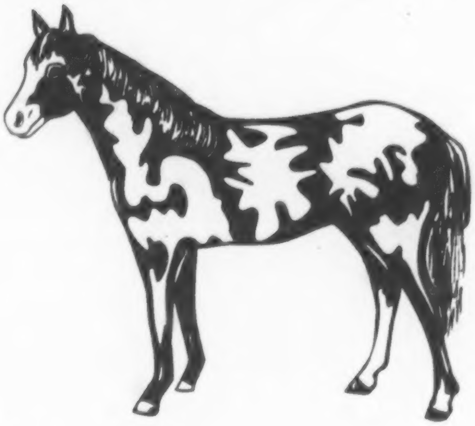
c. ____________________



d. ____________________



e. ____________________



f. ____________________

Match the terms in Column A to their appropriate definitions in Column B by writing the corresponding letter in the blank.

Column A

_____ 6. Foal

_____ 7. Mare

_____ 8. Dam

_____ 9. Hybrid

_____10. Colt

_____11. Gelding

_____12. Jack

_____13. Weanling

_____14. Stallion

_____15. Filly

_____16. Yearling

Column B

a. A female horse less than two years of age.

b. When a mare gives birth, or the name for either a male or female young horse.

c. Horses from 1-2 years of age.

d. A male donkey.

e. A female horse of breeding age.

f. A horse from 6-12 months of age.

g. A castrated male horse.

h. A male horse less than two years of age.

i. A male horse of breeding age.

j. A mule's mother.

k. Parents are of different species.

Clinical/Laboratory Activities

1. Research horse breeds at the library or on the Internet. Locate illustrations that will help you to identify different breeds of horses.

2. If working at a practice that treats horses, discuss common health problems, treatments, and procedures with the veterinarian or veterinary technician. Find out the method of identification used to describe a horse in its medical record.

3. Find an opportunity to get close to horses. Attend a local horse show or visit a stable. Therapeutic riding stables often are looking for volunteers to assist riders with disabilities.

Lesson 5:
Exotic Animals

Objectives:

A. Identify common breeds of exotic animals treated.

B. Use species terminology correctly.

Key Terms:

- Exotic animals
- Reptiles
- Cold-blooded
- Warm-blooded
- Temperate species
- Tropical species
- Ecdysis
- Clutch
- Carnivores
- Herbivores
- Omnivores
- Plastron
- Dorsal crest
- Dewlaps
- Photoperiod
- Molt
- Cocks
- Hens
- Hobs
- Jills
- Kits

Exotic animals are animals that do not live and reproduce naturally in the geographic region in which they are being treated. What is exotic in the United States is native to various other parts of the world. Zoo animals are a special group of exotic animals. There are breeds of livestock considered exotic, such as the Brahman which is native to India. Traditionally, animals considered exotic in veterinary medicine include reptiles (including those native to the United States), tropical birds, ferrets, and some pocket pets including hedgehogs. Exotic animals are becoming more popular as household pets and are seen in most veterinary clinics on occasion. Some veterinarians specialize in exotic animal medicine. Exotic animals have specific needs and problems that require specialized knowledge, equipment, and drugs. Much of exotic animal medicine is actually animal husbandry; the science of managing the nutrition and environment of the animal to prevent illnesses.

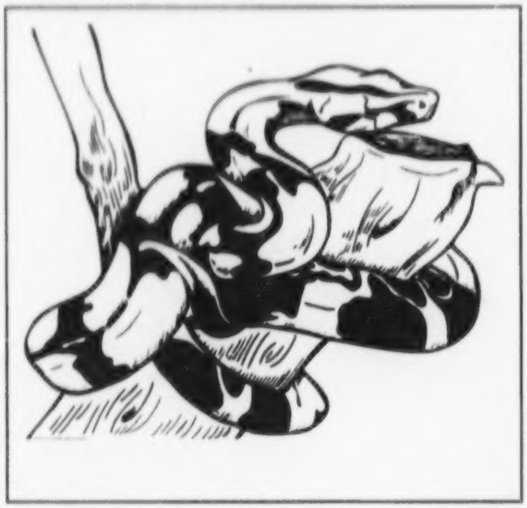
Reptiles

Reptiles are **cold-blooded** animals, which means that their body temperature is not regulated internally but is equal to the temperature of their environment. **Warm-blooded** animals, including mammals and birds, maintain a constant body temperature despite changes in environmental temperature. Reptiles are vertebrates, covered with scales or horny plates. When compared to dogs and cats, the number of reptiles kept as pets is estimated to be small. Many people own reptiles because they enjoy owning a unique pet. Contrary to what many people believe, reptiles become stressed very easily, so it is best to limit handling of these animals. Most reptiles seen in veterinary practices have problems relating to poor husbandry such as inadequate housing, temperature control, diet, and unnecessary handling.

Snakes

The two categories of snakes are **temperate species** (73.4°-82.4°F) and **tropical species** (78.8°-86°F). Environmental temperatures should not fall below 75°F nor above 90°F. The most commonly kept temperate species include king snakes, rat snakes, hog-nosed snakes, and garter snakes. The most commonly kept tropical species are boa constrictor, Burmese pythons, and reticulated pythons. Figure 5.1 illustrates a boa constrictor. The life span of snakes ranges from 8-60 years, depending upon the species.

Figure 5.1 - Boa Constrictor



All snakes undergo **ecdysis** annually. Ecdysis is the sloughing of their outer skin, a necessary function of reptiles and amphibians that permits skin renewal as they grow. The initial sign of ecdysis is a milky bluish color to the eyes. The entire process takes 8-14 days in the snake. Molt is another term for ecdysis; molting also occurs in insects as they grow and in birds to replace their feathers. In the reproductive process, most snakes produce eggs. A group of eggs for both reptiles and birds is called a **clutch**. Boas, water snakes, garter snakes, and most vipers give birth to multiple live young. The young are abandoned at birth. Young snakes do not eat until completing their first ecdysis, which occurs four to ten days after birth or hatching.

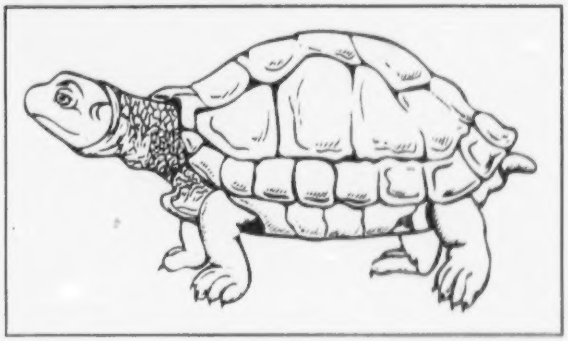
All snakes are **carnivores**, member of the order Carnivora, which means "flesh-eating" or animals that prey on other animals. **Herbivores** are animals that meet their nutritional needs by eating only plant materials and **omnivores** eat both plant and animal materials. Many animals fall between these definitions because most animals will eat what is available to them in order to survive. Other animals will starve themselves if their natural food is not available to them. Their diet depends upon the species. Snakes eat insects and small animals. Smaller snakes need to eat every few days and larger snakes may eat once a week to two weeks. Live prey, such as a rodent which can defend itself, should never be left unattended with a snake for any length of time because it may injure the snake. Many different types of bedding material are available; however, newspaper is the best. Transporting snakes to the clinic can be quite a challenge for an owner. Placing the snake in a pillowcase and then placing the pillowcase in a Styrofoam cooler is the safest and easiest method.

Turtles

Turtles are often neglected pets. Few people know how to care for them properly. The most common problem of captive turtles is improper nutrition. Box turtles eat meats, insects, slugs, worms, dog food, flowers, fruits, and vegetables. Never feed iceberg lettuce to turtles; it has almost no nutritive value and is addictive. Favorite foods include bananas, strawberries, and tomatoes. Handle turtles with care. Turtles can carry *Salmonella spp*, a potentially zoonotic bacterium, also discussed in Unit V, Lesson 3. The average life span of a turtle is 50-130 years. A male turtle has a concave **plastron**, bottom shell, and a long tail; the female turtle has a flat or convex plastron and a short tail. Turtles are egg layers, and the average clutch has 4-12 eggs. Figure 5.2 illustrates a turtle.

Animal Identification, page 4.36

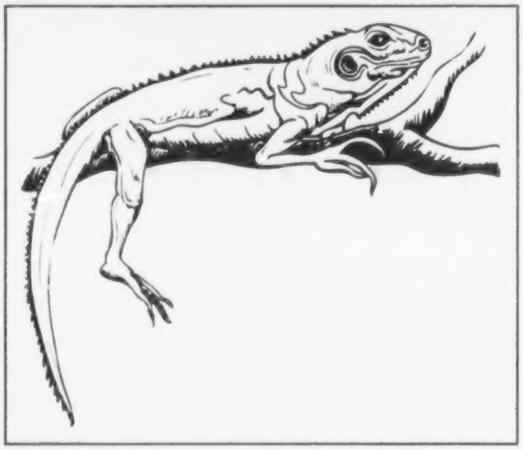
Figure 5.2 - Turtle



Lizards

Worldwide there are more than 3,000 species of lizards, most are wild. The common green iguana is the most popular lizard kept in captivity. With proper care, iguanas will interact with their owners and can become quite docile. Iguanas are known to be quiet and clean. They can be trained to use a litter box or other designated area. Iguanas may grow to 4 feet in length from the nose to the tip of the tail and weigh between 8-12 pounds. They can live to be 20 years old. Male iguanas are slightly shorter than females. Their heads and neck jowls are much larger and body build is more robust than females. Figure 5.3 illustrates an iguana.

Figure 5.3 - Iguana



Iguanas have a **dorsal crest**, spines that go down the middle of their back, from their neck to the base of the tail. The dorsal spine crest of males is more developed than the females. Iguanas also have **dewlaps**, loose skin that hangs under the neck. Dewlaps serve several purposes. They may be extended to help increase body surface area for absorption of sunlight. Dewlaps are also used during courtship and combat. Iguanas have a parietal or third eye that is between their lateral eyes on top of their heads. It does not serve as a primary visual organ but it will respond to shadows which is helpful for survival by warning the iguana of a predator. The eye's purpose is to help the iguana regulate how much time it spends in direct sunlight. Most iguanas require a **photoperiod** of 12-14 hours a day. A photoperiod is the relative exposure of an organism to daylight as a proportion of the total day. The reproductive systems of iguanas and many other animals, birds, and plants are dependent on the amount of light they are exposed to in order to function. The photoperiod is important for maintaining good health and is necessary if the iguana is to breed in captivity.

An iguana can change color rapidly, usually within minutes. Color changes in response to temperature, physical conditions, and social status. As the iguana continues to bask in the sun, its temperature rises and its color becomes lighter. In extreme heat, their heads can turn pale gray or even white. Ill, injured, chilled, or depressed iguanas are much darker than normal. Prior to and during courtship, male iguanas become a bright gold or orange color. The female does not change color as she matures or during courtship.

As iguanas grow, they **molt** or shed their outer layer. Molting is consistent with growth and slows as growth slows, although it never ceases. Iguanas are egg-layers. The number of eggs laid varies greatly depending upon the size of the female and her age, nutrition, and health. Very young iguanas may eat animal-based foods in addition to vegetation. At one-half to two-thirds grown, they begin to eat vegetables. Adults primarily eat leaves, fruits, and blossoms.

Birds

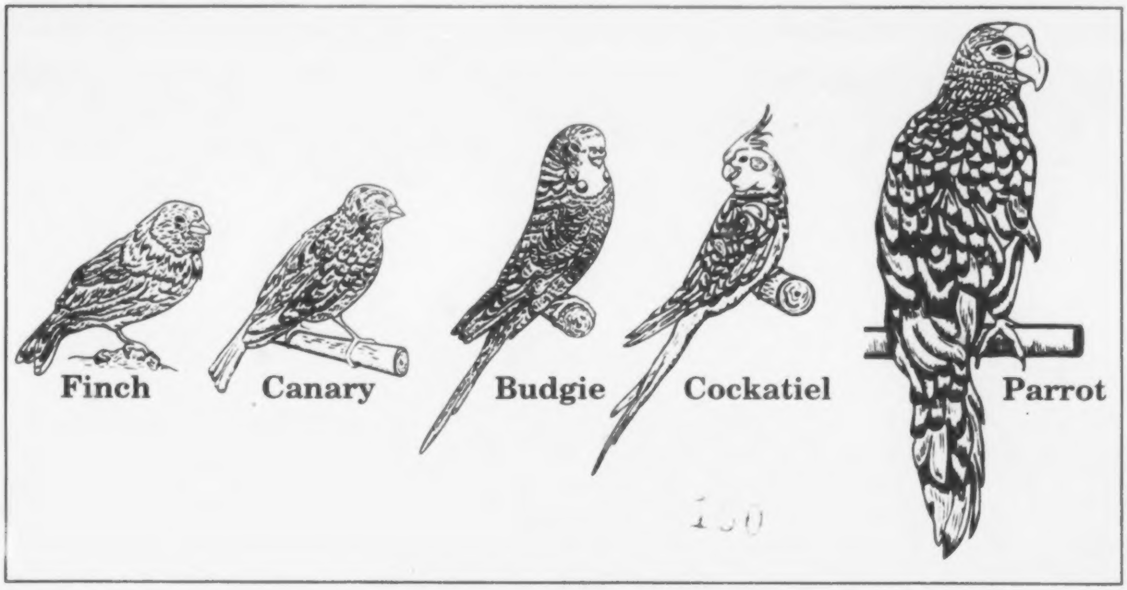
Caged birds are now the third most common pets in the United States. Figure 5.3 illustrates several types of pet birds. Birds are popular pets because they are beautiful and easily trained, require minimum housing, and may live long lives. The life span of birds ranges from eight to more than 40 years depending upon the species. Male birds are called **cocks** and females are called **hens**. As with reptiles, a nest or batch of bird eggs is called a clutch. All birds should be provided with fresh water daily. Caged birds will eat seeds, fruits, vegetables, grains, food pellets, or combinations of these, depending upon the species. Bird droppings contain both urine and feces.

The bird's primary weapon is its beak, although birds will also use their wings and feet. Care must be taken when handling birds because they are easily stressed. Many owners have their birds' wing feathers clipped by the veterinarian to restrict flight. Clipping these feathers will not prevent flight, only restrict it. Birds tolerate cold temperatures better than heat; however, care must be taken to avoid temperature extremes and drafts. Most problems with caged birds are due to the owner's ignorance.

Ferrets

The popularity of ferrets has increased dramatically in recent years. Ferrets are carnivores and should be fed a high quality cat food or ferret chow. The average life span of a ferret is 6-12 years. Male ferrets are called **hobs** and female ferrets are called **jills**. The male ferret's testes only descend during the breeding season, from March to August. Young ferrets are called

Figure 5.3 - Pet Birds

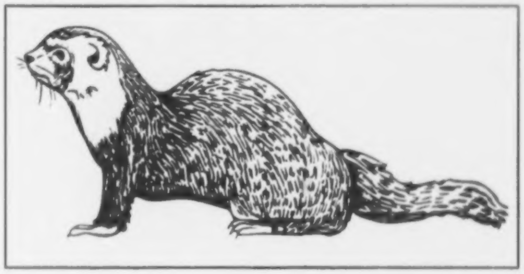


kits and the average litter size is eight kits. Some diseases that affect dogs and cats can affect ferrets. Ferrets are vaccinated with canine distemper vaccine because they are extremely susceptible to canine distemper.

Ferrets can be trained to use a litter box. Both sexes have musk glands giving them a strong odor. The primary defense mechanism of ferrets is their teeth. When threatened it will not hesitate to bite. Ferrets are notorious for chewing on and eating things; they are presented often to the veterinarian with a blockage in their intestines. Figure 5.4 illustrates a ferret.

Test Your Knowledge: Complete the following activity sheet to test your knowledge and understanding of the materials you have studied in this lesson.

Figure 5.4 - Ferret



Lesson 5: Exotic Animals

Activity Sheet

1. List four common exotic animals seen in veterinary practices.

   a. ______________________________

   b. ______________________________

   c. ______________________________

   d. ______________________________

2. Define the terms cold-blooded and carnivore.

   ____

   ____

3. List the two categories of snakes and provide an example species for each category.

   a. ______________________________

   b. ______________________________

Write the corresponding letter of the animal in Column B in the blank in front of the terminology in Column A if it applies to the animal. A blank may have more than one letter.

Column A	Column B
______ 4. Jills and hobs	a. Birds
______ 5. Dewlaps	b. Ferret
______ 6. Plastron	c. Iguana
______ 7. Dorsal crest	d. Snake
______ 8. Ecdysis or molt	e. Turtle
______ 9. Clutch	
______ 10. Hens and cocks	
______ 11. Kits	

Clinical/Laboratory Activities

1. Ask the veterinarian or veterinary technician about the exotic pets he or she has as patients. Discuss the common health problems, treatments, and procedures involved in exotic animal care.

2. Visit a pet store or zoo to see a variety of reptiles and birds. Ask a pet shop owner about the popularity of the different animals he or she sells as pets.

3. Research at the library or on the Internet for regulations regarding exotic animals. Find out if there are any restrictions on exotic animals in your area.

Lesson 6: Common Food Animals

Objectives:

A. Identify common breeds of food animals treated.

B. Use species terminology correctly.

Key Terms

- Bovine
- Cow
- Heifer
- Bull
- Steer
- Calf
- Calving
- Dry cow
- Lactating or wet cow
- Freshen
- Colostrum
- Herd
- Polled
- Ruminants
- Crossbreeds
- Porcine
- Sow
- Gilt
- Boar
- Stag
- Barrow
- Farrow
- Piglet
- Shoat
- Caprine
- Nanny or doe
- Billy or Buck
- Wether
- Kidding
- Kid
- Wattles
- Ovine
- Ewe
- Buck or Ram
- Lamb or Lambkin
- Lambing
- Fleece
- Flock

In 1992, the United States Department of Agriculture (USDA) reported a food animal population of more than 96 million cattle, 59 million pigs, 11 million sheep, and 2 million goats. Some food animals, such as goats, pigs, and sheep, also make good pets.

Producers value veterinary care for reasons that are different from pet owners. Economics plays a big role in farming. Emphasis is on disease prevention and herd health because it is more efficient than treating animals that are already sick. Veterinary treatments must be monitored closely to ensure maximum economic return from these animals. An animal that is medicated requires a certain amount of withdrawal time, the required time that must pass before the animal can be used for human consumption. Medication is injected into specific areas of the animal's body because injections can cause long-term damage to an animal's muscle and carcass.

Cattle

Bovine is a formal term that describes or refers to cattle or any member of the bovid family including bison, buffalo, and their close relatives. An adult female bovine is a **cow**, and a female before giving birth to her first calf is called a **heifer**. A breeding male bovine is called a **bull**, and a male castrated before reaching sexual maturity is a **steer**. The mother of a calf is called a dam, and its father is a sire. A young bovine is called a **calf** if it is less than one year of age. A cow giving birth is called **calving**. A dairy cow is referred to as a

dry cow if not currently giving milk and a **lactating** or **wet cow** if milking. **Freshen** means to come into milk after giving birth. **Colostrum** is the first milk that comes from the mother. A group of cattle is a **herd**. Livestock without horns are called **polled**. Cattle serve three main purposes: beef production, milk production, and a combination of beef and milk production. Cattle are **ruminants**, even-toed hoofed mammals that chew cuds and have complex four-chambered stomachs that convert roughage to meat, milk, and by-products.

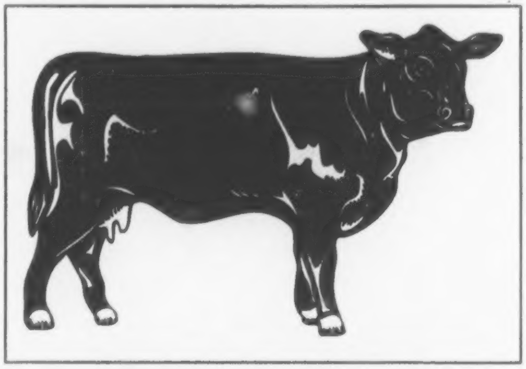
Common Breeds of Cattle

Breeds of cattle differ in size, color, type, and trait performance. Listed below are a few of the more common purebred cattle breeds. There are more than 88 different breeds of cattle in the United States. While this lesson discusses common breeds of livestock, many food animal breeds are **crossbreeds**, the product of two animals both of which are different breeds. Crossbreeding is common in beef cattle, swine, and sheep production. There are two primary purposes for crossbreeding, hybrid vigor and creating new breeds. When two animals with different genetic backgrounds are bred in an attempt to produce offspring that will be superior to either parent in terms of desired traits, the offspring's superiority is the result of hybrid vigor. The most popular crossbreed in beef cattle production is the black baldy, the offspring of a Hereford and an Angus, which produces a black calf with a white face. Forming a new breed requires crossing two breeds with characteristics or traits that are very different. From these two breeds will come a new breed that has the best characteristics of each breed. An example of this is the crossbreeding of the Angus with the Brahman to create the Brangus. Crossbreeding cattle is often done to produce a breed with better ability to tolerate heat or to gain more weight. Swine are often crossbred to produce breeds that have longer carcasses, and sheep are crossbred to improve wool quality.

Beef Cattle

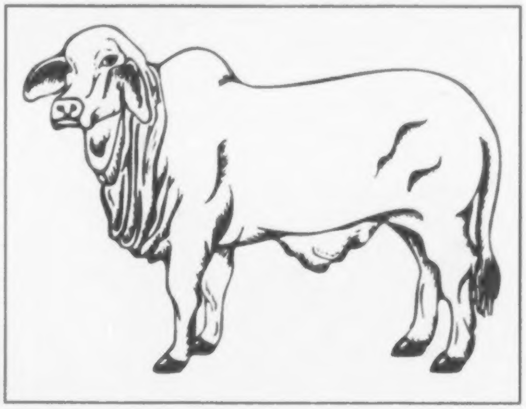
Common beef cattle breeds include the Aberdeen Angus, Herefords, Shorthorns, Charolais, Brahman, Simmental, and Limousin. The Aberdeen Angus originated in Scotland. The Angus can be black or red in color and are polled. Figure 6.1 illustrates an Angus.

Figure 6.1 - Angus



The Brahman originated in India. Figure 6.2 illustrates a Brahman. The breed is also called "humped cattle" due to the hump over the shoulders. Brahmans have very loose skin and droopy ears. Gray is

Figure 6.2 - Brahman



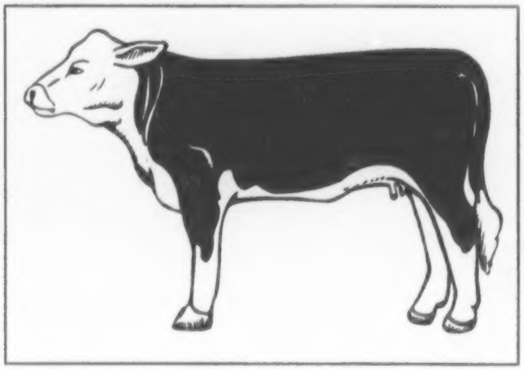
their most common color, but they also can be red. The Brahman is known for withstanding high temperatures.

The Charolais originated in France and are one of the oldest breeds. They are creamy white in color.

The Chianina originated in Italy and is considered a triple-purpose breed (beef, diary, and work). It is the largest of the breeds. The heavily-muscled Chianina can get as tall as six feet at the withers and weigh as much as 4,000 pounds. The Chianina is grayish-white and has black markings on its feet, nose, and switch. The skin of the Chianina is black.

The Hereford originated in England. Herefords are shades of red to yellow with white on the face and varying amounts of white on the underline, flank, breast, and below the knees and hock. They are often called white-faced cattle. Herefords can be polled or horned. Figure 6.3 illustrates a Hereford.

Figure 6.3 - Hereford

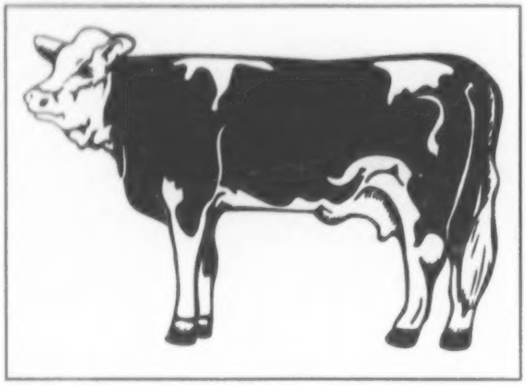


The Limousin breed originated in France. The Limousin is very muscular, red to black in color, and both polled and horned.

The Shorthorn originated in England. They can be white, roan, or red. Some are red and white spotted. The Shorthorn is one of the largest of the English breeds. Shorthorns can also be polled or horned.

Simmental cattle come from Switzerland and are red and white or black and white. The red varies from dark red to almost yellow. The black varies from dull gray to black. The Simmental was first developed as a dual-purpose breed used for both beef and dairy. Figure 6.4 illustrates a Simmental.

Figure 6.4 - Simmental



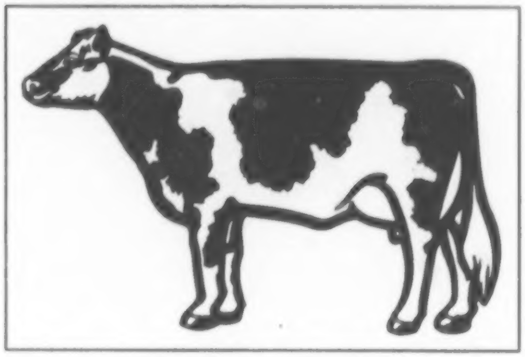
The Santa Gertrudis, Beefmaster, Brangus, and Charbray are all beef breeds developed in the United States. The Santa Gertrudis is the first true breed developed in the U.S., is red in color, and is a hybrid of Shorthorn and Brahman. The Beefmaster is a hybrid of the Shorthorn, Brahman, and Hereford. The Brangus is a hybrid of the Brahman and Angus. The Charbray is a hybrid of Charolais and Brahman.

Dairy Cattle

Dairy cattle breeds include the Ayrshire, Brown Swiss, Guernsey, Holstein-Friesian, Jersey, Milking Shorthorn, and Red Poll. All dairy breeds are naturally horned but most owners dehorn them for safety reasons. The main purpose for dairy cattle is milk production. Listed are the five major dairy breeds and their characteristics.

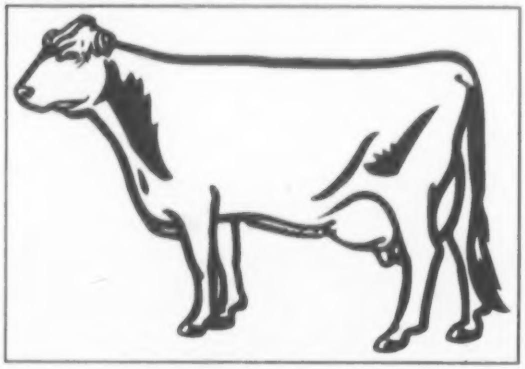
The Ayrshire originated in the county of Ayr, in southwestern Scotland. They are light to deep cherry red, mahogany, brown, any combinations of these colors with white, or white alone. They have widespread horns that tend to curve up and outwards. Figure 6.5 illustrates an Ayrshire.

Figure 6.5 - Ayrshire



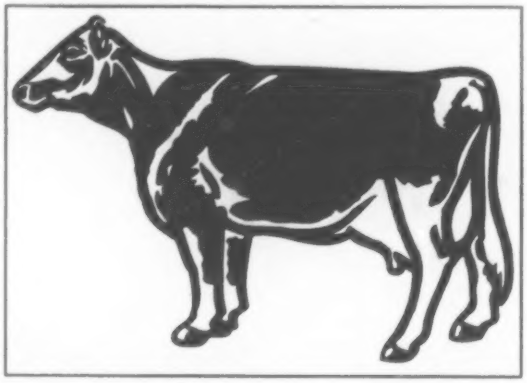
Brown Swiss cattle originated in the Alps of Switzerland. Figure 6.6 illustrates a Brown Swiss. They are solid brown varying from light brown to almost black. The muzzle and strip along the backbone are light in color and their horn tips, nose, tongue, and switch are black in color. The Brown Swiss is a large cow with similar markings to the Jersey. The Jersey breed has more delicate features.

Figure 6.6 - Brown Swiss



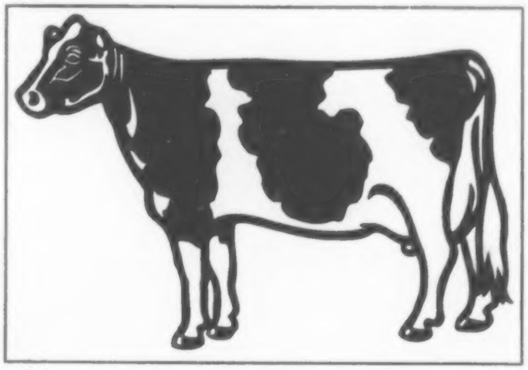
The Guernsey breed originated on the Isle of Guernsey. They are light fawn to red in color with white markings on the face, legs, switch, and flank. The Guernsey has medium length horns. A distinguishing characteristic about the Guernsey is that its milk and skin are golden in color. The Jersey and Guernsey are referred to as "Channel Island" breeds because of their areas of origination. Figure 6.7 illustrates a Guernsey.

Figure 6.7 - Guernsey



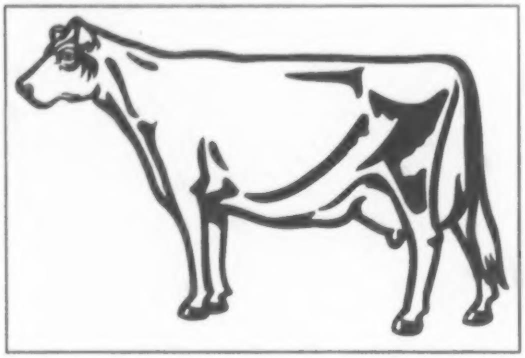
The Holstein-Friesian originated in the Netherlands and northern Germany. They are black and white. The Holstein is the largest of the dairy breeds. Figure 6.8 illustrates a Holstein.

Figure 6.8 - Holstein



The Jersey breed originated on the Island of Jersey. Jerseys vary in color and are most commonly fawn with or without white markings. The muzzle is black with light coloring around it. Their tongue is also black. Jerseys produce the highest percentage of butterfat in their milk. Figure 6.9 illustrates a Jersey.

Figure 6.9 - Jersey



The Milking Shorthorn and Red Poll are two breeds of dual purpose cattle (beef and dairy) found in the United States.

Swine

Porcine is a formal term that describes or refers to a pig. Currently, most swine are raised in confinement operations. Farmers concentrate their efforts on producing the maximum number of litters and piglets in a year and quickly preparing the pigs for market.

An adult female pig is called a **sow**. Before giving birth to her first litter the female is called a **gilt**. An adult breeding male pig is a **boar**. A castrated male is called a **stag** if it was castrated as a mature animal and **barrow** if it was castrated before reaching sexual maturity. **Farrow** is the term for sows giving birth. A young pig is a **piglet**. A young pig less than a year old and weighing between 60-160 pounds is referred to as a **shoat**. A group of pigs is called a herd.

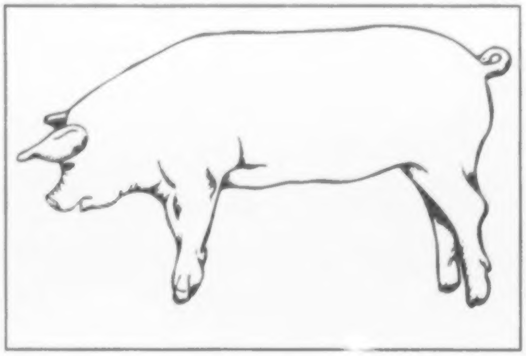
Common Breeds of Swine

There are more than 17 breeds of swine in the United States. Swine breeds are distinguished by differences in their ears and body color. Breed names that end in "-shire" and the Tamworth have erect ears. All others have drooping ears. Three breeds of swine originated in England: Berkshire, Yorkshire, and Tamworth.

The Berkshire is the oldest of the swine breeds. It has a black body with six white points: four legs, face, and tip of its tail.

The Yorkshire, also known as the "large white," is white, very large, and long. Figure 6.10 illustrates a Yorkshire. The ears are erect. Yorkshires are good mothers and have large litters.

Figure 6.10 - Yorkshire



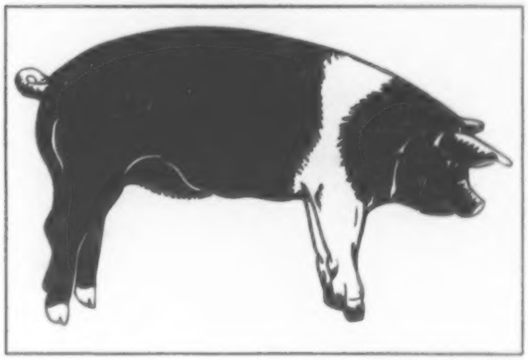
The Tamworth is red and has erect ears and a long, narrow head.

The Chester White, Hampshire, Duroc, and Poland China were all developed in the United States. The Chester White is white and has medium to large drooping ears.

The Duroc is golden to dark red. The ears are small to medium in size and will droop down and forward off the face. The Duroc is hardy and has good mothering abilities and growth traits.

The Hampshire is black with a white belt. The belt extends from one front foot over the shoulder and down the other leg. The Hampshire has small erect ears and is known for its mothering ability. Figure 6.11 illustrates a Hampshire.

Figure 6.11 - Hampshire

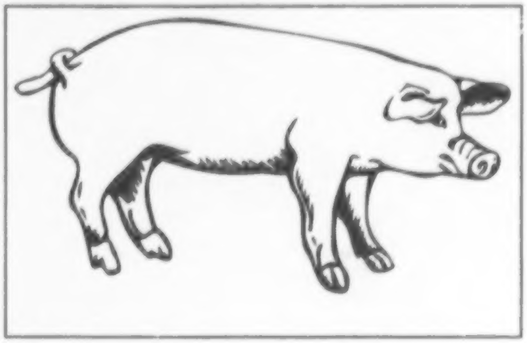


The Poland China is mostly black with six white points: all four feet, face, and tip of the tail. The ears are medium in size and will droop.

The Landrace originated in Denmark. The Landrace is white with a long body. The ears are large and drooping. Figure 6.12 illustrates a Landrace.

Miniature pigs also belong to the swine family. There are many different varieties of miniature pigs. The Vietnamese Potbellied Pig (VPB) is the most commonly seen. The VPB is not raised for meat production as are the previously mentioned breeds. These pigs are clean and easy to housebreak. Potbellies bond very well with humans. They are intelligent, affectionate, and can learn to do tricks. Potbellied pigs have sway backs, pot bellies, wrinkled faces, small erect ears, and straight tails. They come in black, black and white, or white. The ideal weight for a one-year-old VPB is less than 50 pounds; the maximum weight is 95 pounds.

Figure 6.12 - Landrace



Goats

Caprine is a formal term that describes or refers to a goat. Most goats are raised in a small herd. The preferred term for a female goat is **doe**, but it is also called a **nanny**. The preferred term for a breeding male goat is **buck**, but it is also called a **billy**. A **wether** is a castrated male. **Kidding** is the term for goats giving birth. A young goat is called a **kid**. Most of the breeds have horns that in the wild vary greatly in size and shape. Horns are primarily used for defense. They can be a real nuisance on domestic breeds. Goats may have appendages called **wattles** hanging from their necks. Wattles, or tassels, are about 3-inch appendages covered with skin and hair that serve no purpose.

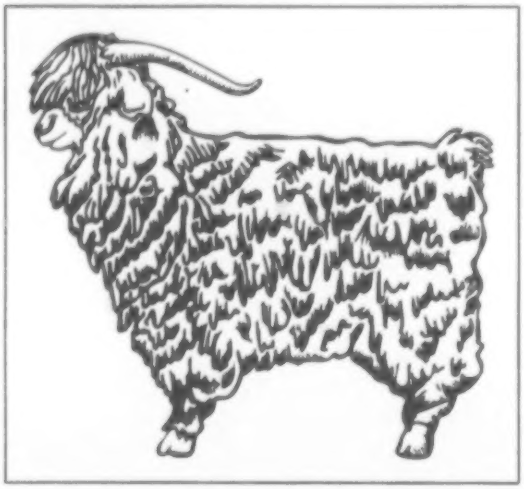
Common Breeds of Goats

The groups of goats are mohair, dairy, and meat. Swiss goat breeds are best known for their dairy quality. Indian and Nubian goats are dual-purpose meat and milk breeds. Spanish and South African goat breeds are known for their meat. The Turkish Angora, Asian Cashmere, and

Russian Don goats are raised for mohair and cashmere wool. The West African Pygmy goat is popular as a laboratory animal and a pet.

The Angora originated in the Near East. Angoras look more like sheep than goats. Their long upper coats of mohair hang in silky ringlets or small flat curves. Angoras have short, thin, straight or concave noses and are bearded. They have twisted horns and long, heavy, drooping ears. The breed is small and usually white. Figure 6.13 illustrates an Angora.

Figure 6.13 - Angora



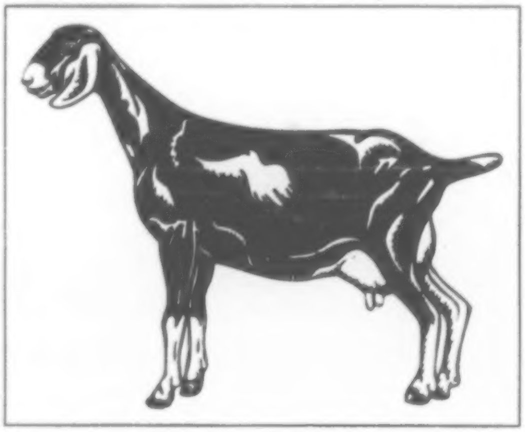
The Saanen originated in Switzerland and has been exported globally for its milk production. The Saanen is completely cream to white in color with short, smooth hair and may be either horned or polled. Saanens, like most Swiss goats, have erect ears.

The Toggenburg is a dairy goat from northeast Switzerland. It is slightly smaller than the Saanen. Toggenburgs are brown with white stripes on the face, ears, and legs. Toggenburgs are mostly short-haired but may have longer hair on the back and on the flanks that is light in color. They have medium-size, erect ears.

The Alpine, including the French, Rock, and British, are Swiss dairy breeds of goats. Alpines are as large as the Saanen and have erect ears. They have smooth, short hair coats that are usually faded shades of white into black with white facial stripes on black. Alpines may be either horned or polled. Males have long, coarse hair along the spine.

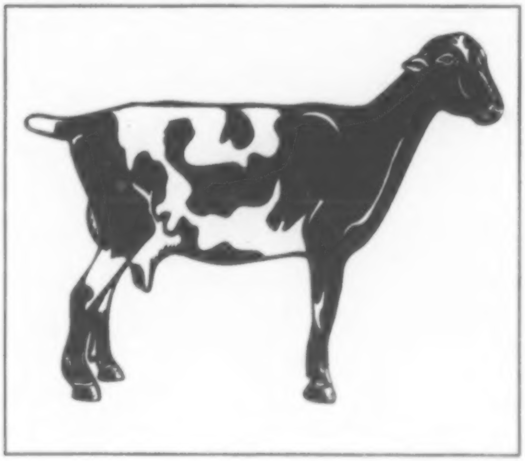
Nubian is a breed developed in England from native goats crossed with Indian and Nubian breeds. Figure 6.14 illustrates a Nubian. Nubians are shorthaired with large heads, broad Roman noses, and large, long, drooping ears. They may be horned or polled; their horns are spiral shaped. Nubians are a large breed like the Saanen and have long legs. They come in all colors or combinations of colors.

Figure 6.14 - Nubian



The La Mancha is a new breed developed in California from Spanish, Swiss, and Nubian crossings. La Manchas are about the same size as the Toggenburgs. They have straight noses and smooth, fine, short hair. They are multicolored with white; goats with white markings are dominate. La Manchas may be horned or polled. The distinguishing characteristic of La Manchas is their tiny erect ears or lack of external ears. The fat content of their milk is higher than the Swiss breeds. Figure 6.15 illustrates a La Mancha.

Figure 6.15 - La Mancha



Pygmy goats are dwarf, short-legged goats from West and Central Africa and the Caribbean. They are dual purpose meat and dairy goats but their growth rates and milk production are lower than the other goats. Pygmy goats often have twins and breed year long. They are adaptable to tropical climates.

The Boer goat was developed in South Africa for meat production. The breed is fairly new in the United States. Boer goats are large and long legged. They are white with a reddish-brown head and neck. The head may have a white blaze, and the body sometimes has brown patches. Boer goats have long lop ears and short, soft hair. This breed of goat is known for rapid weight gain, heavy muscling, and high fertility. The Boer goat typically gives birth to twins. Boer goats are naturally horned.

Sheep

Ovine is a formal term to describe or refer to sheep. A female sheep is a **ewe**, and a male sheep is called a **buck** or **ram**. Some rams are horned. Like goats, a castrated male is a **wether**. A young sheep is a **lamb** or **lambkin**. **Lambing** is the term for sheep giving birth. An entire coat of wool as it comes from the sheep or while still on the live animal is referred to as its **fleece**. A group of sheep is called a **flock**.

Common Breeds of Sheep

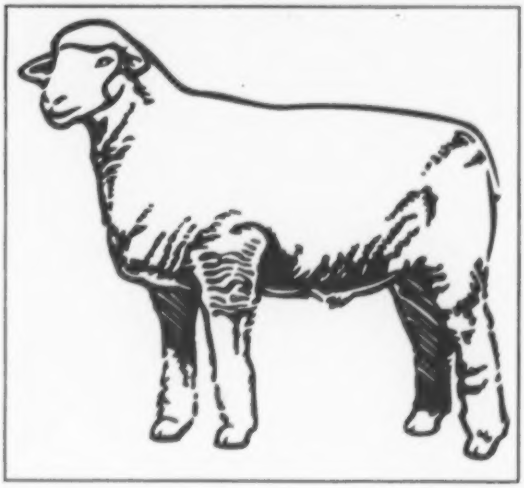
Sheep are dual purpose, meaning that they can produce two cash crops a year: wool and lambs. Some sheep are now also being raised for milk production. Sheep are raised in flocks and feedlots. Sheep breeds are grouped according to their type of wool. The grade of wool depends on its thickness. Grades of wool include medium, long, fine, and fur. There are more than 36 breeds of sheep.

Meat-type medium wool sheep breeds include the Cheviot, Columbia, Corriedale, Dorset, Hampshire, Montadale, Southdown, and Suffolk. The Cheviot breed originated in Scotland and is one of the oldest breeds of sheep. Cheviots are small, short-legged, and white-faced with bare legs. They are good mothers and easy lambers (easy births). The cheviot has an alert look to its head, and its ears are erect and high set.

The Columbia was the first breed developed in the United States. They are large with a moderately open white face and wool on the legs. Their partially wool-covered ears extend outward from the head. Columbias are prolific, hardy, and known for being good mothers with good milking ability. Figure 6.16 illustrates a Columbia.

The Corriedale originated in New Zealand. They are medium to large with white, moderately open faces and wool-covered polls and legs. Ears are small and free of wool.

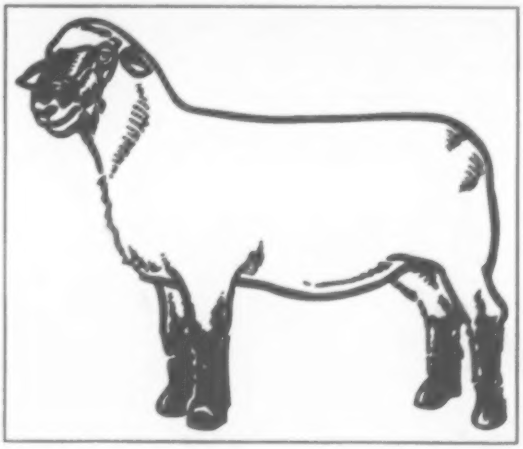
Figure 6.16 - Columbia



Dorsets originated in England. They are medium in size and white faced, with wool on their legs. They are not seasonal breeders. Therefore, they can have more than one lamb crop in a year's time. Their ears are small, and they are considered heavy milkers.

The Hampshire comes from England and is a large breed with black faces, ears, and legs. Figure 6.17 illustrates a Hampshire. The face is usually free of wool. They are good mothers and have good milking abilities. They are considered a fast-growing breed.

Figure 6.17 - Hampshire

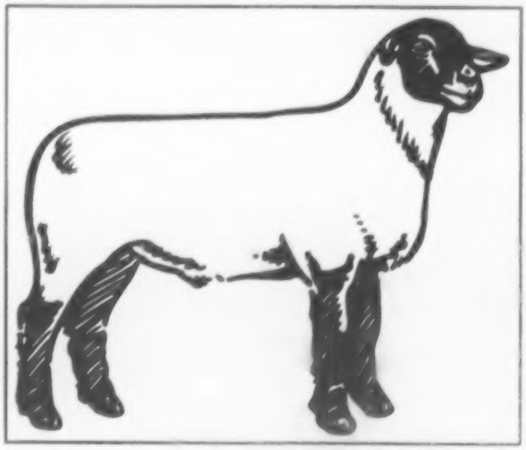


Montadales were developed in the United States. The Montadale is medium in size with a white face and bare head and legs. Having a black nose and hooves is a preferable trait.

The Southdown is one of the oldest breeds. It originated in England. The Southdown is small to medium in size with gray to mouse brown face, legs, and ears. The ears are small and wool covered.

Suffolks originated in England. The Suffolk is a large muscular breed with jet black face, head, ears, and legs. The ears of the Suffolk extend outward. Suffolks have excellent growth rates and milking and lambing abilities. Figure 6.18 illustrates a Suffolk.

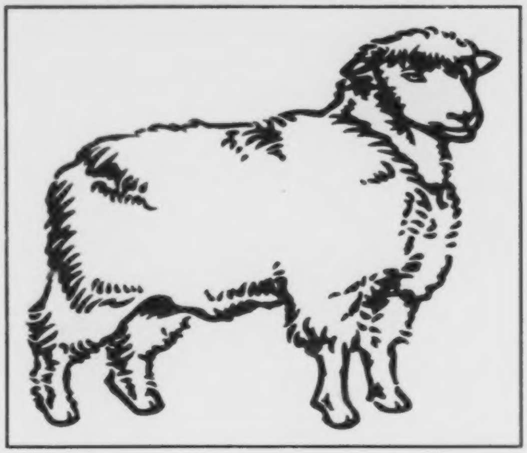
Figure 6.18 - Suffolk



The Cotswold is a meat-type long wool breed native to the Cotswold Hills of Gloucestershire, England. The Cotswold fleece has natural wavy curls. It has a tuft of wool on the forehead. The Cotswold is large in size and has a white face, ears, and legs with some gray spots. It is one of the oldest breeds of sheep. Figure 6.19 illustrates a Cotswold.

The Rambouillet is a fine wool breed that originated in France. The Rambouillet is

Figure 6.19 - Cotswold



tall with completely wool-covered legs. They are white and their faces are free of wool. Their ears, head, and jaw are well-wooled.

The Karakul is a fur-type breed that originated in Central Asia. This breed is raised primarily for their pelts, which are used in fur manufacturing. The fleece is tight and curly, with a solid or mottled natural color. The face is free of wool, and the ears are large, long, and drooping. Earlessness is acceptable in the breed.

Test Your Knowledge: Complete the following activity sheet to test your knowledge and understanding of the materials you have studied in this lesson.

Lesson 6: Common Food Animals

Activity Sheet

1. What are the three main purposes of cattle?

   a. ______________________________

   b. ______________________________

   c. ______________________________

2. List five breeds of beef cattle.

   a. ______________________________

   b. ______________________________

   c. ______________________________

   d. ______________________________

   e. ______________________________

3. List three breeds of dairy cattle.

   a. ______________________________

   b. ______________________________

   c. ______________________________

4. What bovine dairy breed is black and white?

   ____

5. What is crossbreeding and why is it done?

   ____

   ____

   ____

   ____

6. Which breeds of swine have erect ears?

7. Which breed of swine is known as the large white?

8. List the three groups of goats and an example breed for each group.

a.

b.

c.

9. What are the two cash crops of sheep?

a.

b.

10. List three breeds of sheep.

a.

b.

c.

11. What two breeds of food animals discussed in this lesson are currently popular as pets?

a.

b.

12. List the formal term that describes or refers to the following animals.

Cattle:

Swine:

Goats:

Sheep:

Match the terms in Column A to their appropriate definition in Column B by writing the corresponding letter in the blank.

Column A

_______13. Heifer
_______14. Buck
_______15. Ewe
_______16. Farrow
_______17. Boar
_______18. Bull
_______19. Colostrum
_______20. Sow
_______21. Kid
_______22. Shoat
_______23. Steer
_______24. Polled
_______25. Doe
_______26. Wattle
_______27. Stag
_______28. Gilt
_______29. Wether
_______30. Lamb or lambkin
_______31. Ram
_______32. Calf
_______33. Barrow
_______34. Piglet

Column B

a. A young goat.
b. A male pig castrated before reaching sexual maturity.
c. A female pig.
d. A castrated male goat or sheep.
e. An adult female cow before giving birth to the first calf.
f. A young sheep.
g. A male pig castrated as a mature animal.
h. A female goat.
i. A young pig less than a year old and weighing between 60-160 pounds.
j. A sow giving birth.
k. A breeding male bovine.
l. A young pig.
m. First milk that comes from the mother.
n. Appendages hanging from a goat's neck.
o. A young bovine.
p. A male bovine castrated before reaching sexual maturity.
q. Livestock without horns.
r. A female sheep.
s. A male goat or sheep.
t. A female pig before giving birth to its first litter.
u. A male sheep.
v. A male breeding pig.

Clinical/Laboratory Activities

1. If working for a veterinarian who treats food animals, discuss the breeds of livestock being treated. Find out what the common health problems, procedures, and treatments are for different types of livestock. Learn the different methods of identification used for livestock.

2. Research at the library or on the Internet for livestock breed information. Write a report describing the common breeds of livestock farmed in your area.

Lesson 7:
Llamas and Alpacas

Objectives:

A. Identify Llamas and Alpacas.

B. Use species terminology correctly.

Key Terms

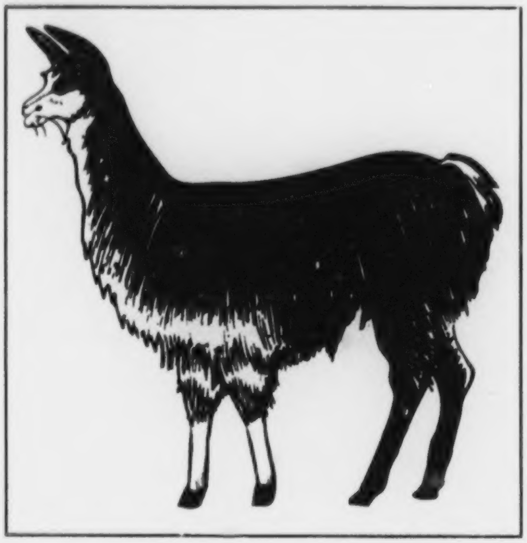
- Crias

South American llamas and alpacas are becoming more popular in the United States for several reasons. They are raised for breeding stock, wool, pets, light pack animals, therapy, and investments. Llamas and alpacas are members of the camelid family. There are four different species of South American camelids: llama, alpaca, guanaco, and vicuna. The llama and alpaca are domesticated animals, and the guanaco and vicuna are wild species. Llama and alpaca gender does not have specific terminology. Newborns are called **crias**. Castrated male llamas and alpacas are called geldings. Llamas and alpacas are modified ruminants with three stomach compartments.

Llama

The llama is the largest of the South American camelids. There are two breeds of llamas recognized in Peru. A woolly variety called "ch aku" (woolly-necked llama) and the "q ara" (short-coated llama). A mature llama weighs between 250-500 pounds. Llamas average 5 feet, 5 inches tall at the withers and 6 feet tall at the head. Llamas have a moderately fine fiber that covers their back, sides, and neck. The belly, inside of legs, and face are covered with short hair. Llamas may be a variety of color shades and patterns of brown, red, black, and white. The life span of a llama averages between 15-25 years. Figure 7.1 illustrates a llama.

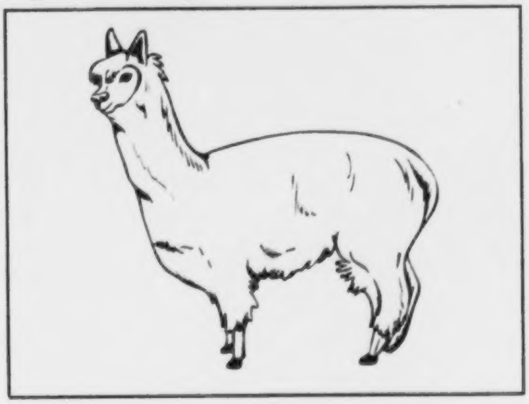
Figure 7.1 - Llama



Alpaca

Alpacas are woollier than the llamas. They have very fine, soft, and dense fiber that provides insulation without being itchy. It also covers their faces and legs. They have good traits for shearing; they are small, gentle, and submissive. There are two breeds of alpacas, the Huacaya and Suri. They are differentiated by fiber length. Huacaya fiber is shorter than the Suri and has a light crimp. The Suri's fiber is silky, long, mostly straight, and hangs in ringlets. Most alpacas are the Huacaya breed in the United States. Mature alpacas weigh between 120-200 pounds and are 3 feet tall at the withers and 4.5 feet tall at the head. The color of alpacas varies from white to black, with varying shade and pattern combinations. The average life span of an alpaca is 18-20 years. Figure 7.2 illustrates an alpaca.

Figure 7.2 - Alpaca



Alpacas and llamas are group oriented animals. They will thrive better when raised with other llamas, alpacas, goats, or horses than when raised alone. Alpacas and llamas use a communal dung pile for both defecation and urination. Their feces are pelleted. They are social animals and will communicate social information with their ear and tail positions. Handling and restraint of these animals require an understanding of their ear and tail positions. Positions convey submission and varying degrees of aggression. Unfriendly llamas will tend to avoid people rather than show aggression toward humans.

Llamas are not very vocal animals but do use several different sounds. They use humming sounds to communicate with each other. Humming is an important sound between a cria and its mother, or between a socialized animal that has been separated and then returned to the group. Alpacas will hum more than llamas. Snorting and clicking sounds denote mild aggression. Frightened llamas and alpacas will make a screaming sound. Male llamas make a screeching sound when fighting.

Test Your Knowledge: Complete the following activity sheet to test your knowledge and understanding of the materials you have studied in this lesson.

After you have completed the activity sheets, you may take the written evaluation for this unit. A score of at least 80 percent indicates you may proceed to the next unit.

Lesson 6: Llamas and Alpacas

Activity Sheet

1. List three purposes for llama and alpaca raising.

    1. ______________________________

    2. ______________________________

    3. ______________________________

2. What are two physical characteristics that differentiate the llama from the alpaca?

    1. ______________________________

    2. ______________________________

3. What are two breeds of llamas?

    1. ______________________________

    2. ______________________________

4. What are two breeds of alpacas?

    1. ______________________________

    2. ______________________________

5. What are llama and alpaca young called?

    ____

6. To what family do llamas and alpacas belong?

    ____

Clinical/Laboratory Activities

1. If you are working with a veterinarian who treats llamas and alpacas, discuss common health problems, treatments, and procedures for these animals.

2. Research on the Internet or at the library for llama and alpaca information. Find out if there is a llama or alpaca farm near you and, if you can, visit. Visit the local zoo to see a variety of camelids.

Unit Checklist

Student Name ______________________________ Overall Unit Rating ________

Activity Sheet: Common Laboratory Animals Rating ________

Comments: ______________________________

Activity Sheet: Common Dog and Cat Breeds Rating ________

Comments: ______________________________

Activity Sheet: Common Ratites Rating ________

Comments: ______________________________

Activity Sheet: Common Horse Breeds Rating ________

Comments: ______________________________

Activity Sheet: Exotic Animals Rating ________

Comments: ______________________________

Activity Sheet: Common Food Animals Rating ________

Comments: ______________________________

Activity Sheet: Llamas and Alpacas Rating ________

Comments: ______________________________

Additional Comments: ______________________________

Teacher Signature ____________________ Date ______________________________

Student Signature ____________________ Date ______________________________

Unit V

Clinic Safety

The animal care assistant must be aware of a variety of safety concerns when working in a veterinary practice. This unit discusses OSHA's Hazard Communication Standard and requirements for veterinary practices; the safe handling of infectious medical wastes and hazardous chemicals; and how to prevent transmission of infectious and zoonotic diseases. You will learn the differences between cleaning, disinfecting, and sterilizing and the importance of keeping all clinic areas clean and orderly. You will also learn how to safely approach animals and to recognize aggressive behavior.

Unit Lessons

Hazardous Materials

Maintaining a Safe Environment

Cleaning, Disinfecting, and Maintaining Clinic Areas

Zoonotic Diseases

Isolation Procedures

Animal Behaviors

Lesson 1:
Hazardous Materials

Objectives:

A. Identify types of hazardous materials.

B. Identify regulations for disposing of medical waste.

C. Identify the biohazard label.

D. Identify OSHA requirements pertinent to the veterinary practice.

E. Prepare hazardous materials for disposal.

F. Locate and read material safety data sheets (MSDS).

Key Terms:

- Infectious waste
- Sharps
- Cultures
- Animal wastes
- Hazard Communication Standard (HCS)
- Hazard Communication Coordinator (HCC)
- Hazardous chemicals
- Corrosive
- Carcinogenic
- Radioactive
- Material Safety Data Sheet (MSDS)
- Dosimeters

Infectious Waste

Waste is considered infectious if it contains pathogens of sufficient virulence (highly infectious) and quantity to produce an infectious disease in a susceptible human host by exposure to the waste. There are three different categories of infectious waste.

1. **Sharps** - Discarded sharps include hypodermic needles, scalpel blades, and broken glass.

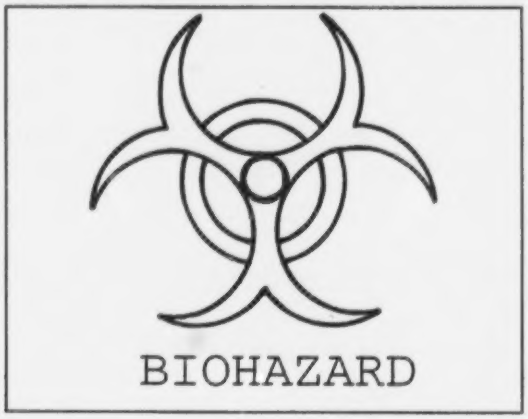
2. **Cultures** (growth media containing certain infectious agents) and associated biologicals - this includes vaccine vials.

3. **Animal wastes** (carcasses, blood, tissues, urine, and feces) that can produce an infectious disease.

Disposing of Medical Waste

Contaminated sharps are disposed of in rigid, leak-proof, puncture-resistant, closable containers before transport. Containers should have a universal biohazard symbol label and should be near work stations to limit the need to recap needles. Needles should not be recapped. If recapping is essential, a one-handed or mechanical procedure should be used to reduce the risk of exposure. Figure 1.1 illustrates the universal biohazard symbol. A contaminated reusable sharp is any instrument or item contaminated with

Figure 1.1 - Universal Biohazard Symbol



blood or other potentially infectious material that can pierce or puncture the skin. Disinfection and sterilization of these items require special procedures. (Unit V, Lesson 2)

Infectious or medical wastes need to be disposed of properly to prevent harmful effects. These products must be treated (decontaminated) before disposal. Methods of decontamination include incineration, steam sterilization (autoclaving), and chemical treatment (bleach water).

Hazard Communication Standard

The Occupational Safety and Health Administration (OSHA) is a government agency responsible for monitoring the health and safety of employees. (Unit I, Lesson 3) OSHA created the **Hazard Communication Standard (HCS)**, a set of guidelines designed to protect all employees in America from potential injury or illness caused by contact with chemicals in the workplace. It is a "Right to Know" law which dictates that all employees have a right to know about health hazards in the workplace and how to protect themselves from such hazards. The OSHA Hazard Communication Standard applies to all employees within the workplace, even those who are part-time or contracted, or do not directly work with hazardous chemicals.

Hazard Communication

Every employer must establish a written hazard communication program for the workplace and must designate one person to coordinate this program. The **Hazard Communication Coordinator (HCC)** is the person responsible for recording and maintaining a list of all hazardous chemicals used within the workplace. This person must also ensure that the workplace is in compliance with OSHA's Hazard Communication Standard.

Hazardous Chemicals

OSHA also regulates aspects of employee safety, such as handling and disposing of potentially **hazardous chemicals**. Hazardous chemicals are products that pose a danger to people or the environment. The Environmental Protection Agency (EPA) determines which chemicals may be considered hazardous. As a rule, a chemical is considered hazardous if it:

- Can spontaneously combust (catching on fire without warning);
- Can react with other substances or chemicals to produce a hazard;
- Is **corrosive** (having a caustic and locally destructive effect on contact with another substance);
- Is toxic (poisonous);
- Is **carcinogenic** (a substance that can cause cancer);
- Is **radioactive** (emitting high energy particles that can damage living cells).

Some chemicals are exempt from the Hazard Communication Standard. These include the following: any chemical considered a drug by the Food and Drug Administration (FDA) that is in its solid final form and ready for administration to patients; cosmetics intended for personal use by employees; consumer products, such as cleansers, which are used in the same way and with the same frequency in the workplace as they would be used in a private home; and tobacco, food, alcoholic beverages, and wood products.

Manufacturers of products must label their products regarding the presence of hazardous chemicals. Labeling methods must identify the chemical in products that may pose a health hazard. The label should include the name and address of the chemical's manufacturer. It should also list appropriate hazard warnings, such as Flammable, Toxic, etc. If several employees will be using a product over a period of time, a photocopy of the original label should be taped to any secondary containers used to dispense chemicals.

When these products are supplied to workplaces in the United States, they must be accompanied by a **Material Safety Data Sheet (MSDS)**, which provides even more specific information for employee protection. Figure 1.2 illustrates a mock sample of a MSDS. A MSDS contains 24-hour phone numbers, information on labeling chemicals, and recommendations for protective equipment that employees must use when working around specific chemicals. All products that contain hazardous material or chemicals must be included on the workplace list, and the HCC must have a MSDS on file for each of those products. To meet the OSHA regulations, the MSDS must have eight sections.

1. Manufacturer Information
2. Hazardous Ingredients/Identity Information
3. Physical/Chemical Characteristics
4. Fire and Explosion Hazard Data
5. Reactivity Data
6. Health Hazard Data
7. Precautions for Safe Handling and Use
8. Control Measures

Annual Training Regarding Hazards in the Workplace

Annual training is required for all employees. Employees must be informed of the Hazard Communication Standard and should be given a copy of the standard. The training should include a description of work practices that use hazardous chemicals and define all areas used to store hazardous chemicals. Employees must be informed of where they may find the written hazard communication program, the list of hazardous chemicals, the file containing MSDS, and the identity of the HCC. Employees must be trained to detect the presence of hazards, and physical and health hazards poised by the specific chemicals used in each workplace must be explained. Employees using hazardous chemicals must be provided with personal protective equipment.

Dosimeters are monitoring devices (usually as lapel pins) worn by employees to detect if their exposure to levels of hazardous materials is acceptable. Dosimeters contain materials that physically (chemically) change when exposed to certain chemicals or radiation. These devices are sent regularly to labs to detect the exposure to the employee. An animal care assistant helping with radiographs must wear a dosimeter.

Another unique OSHA requirement for veterinary practices is the scavenging or removal of anesthetic gases from the building. Anesthetic gas machines have gas scavenging systems. Gases may be scavenged out of the building or gas recovery canisters may be used. Canisters must be changed periodically. The amount of time the anesthetic machine is used will determine the frequency of canister replacement.

Figure 1.2 - Material Safety Data Sheet

Material Safety Data Sheet

Any Chemical Company · 500 Anywhere · USA 00000-0000

"The information herein is given in good faith, but no warranty, expressed or implied, is made"

Emergency Telephone No.: 1-800-000-0000

Date Prepared: April, 1996

SECTION I

Chemical Name and Synonyms: Providone Iodine Solution USP, PVP-I

Trade Name: Iodine Solution (10% Providone Iodine = 1% Available Iodine)

Chemical Family: Polymer, complex of Polyvinylpyrrolidone with iodine

Formula: (C_6H_9NO) n x I

CAS Registry No.: 0000.00

SECTION II: INGREDIENTS

Name	Percent (%)	TLV	Toxicological Data
Providone Iodine USP	10.00	•	Mouse, Oral LD_{50}>8100mg/kg Rat, IV LD_{50}>540mg/kg
Glycerin	1.25		
Igepal	.30		
Purified Water	88.45		

No component is listed by NTP or IARC

•Not Established as having Carcinogenic Potential

SECTION III: PHYSICAL DATA

Specific Gravity: (25°C) 1.025

pH: <6.0

Appearance & Odor: Reddish brown, clear liquid, faint odor

SECTION IV: FIRE AND EXPLOSION HAZARD DATA

Flashing Point (method used): Not flammable

Flammable Limits: None

LEL: n/a

UEL: n/a

Extinguishing Media: n/a

Special Fire Fighting Procedures: n/a

Unusual Fire & Explosion Hazards: None

SECTION V: HEALTH HAZARD DATA

Threshold Limit Value: None established by OSHA or ACGIH

Effect of Overexposure: This product is generally recognized as safe when used as a logical antimicrobial agent. Prolonged exposure to wet solution may cause local irritation to the skin. Elevated concentrations of iodide in the serum may occur if excessive amounts of iodine are absorbed through broken skin, burns, or deep wounds. Iodine may also be absorbed through the lungs and from the gastrointestinal tract. High concentrations of iodide in the serum may produce alterations in thyroid, renal disturbances, acidosis and electrolyte disturbances.

Emergency and First Aid Procedures:

For Eyes: Immediately wash with running water for 5 minutes. Get medical attention if irritation persists.

For Skin: Avoid prolonged contact with excess wet solution. If irritation develops, get medical attention.

For Ingestion: If swallowed, DO NOT INDUCE VOMITING. Drink several glasses of water or milk. Obtain immediate medical attention.

For Inhalation: If fumes cause respiratory discomfort, move to fresh air. Get medical attention if respiratory discomfort persists.

SECTION VI: REACTIVITY DATA

Stability: Stable

Storage: Store at room temperature.

Incompatibility: Not stable toward reducing agents or strong alkalies.

Hazardous Decomposition Products: None

Hazardous Polymerization: Will not occur

Conditions to Avoid: None

Type: Iron; can discolor gold or silver

SECTION VII: ENVIRONMENTAL DATA

Steps to be Taken in Case Material is Released or Spilled: Spills should be cleaned up as soon as possible; wash affected area with dilute ammonia or dilute sodium thiosulfate solution and copious quantities of water.

Waste Disposal Method: Do not discharge more than minute quantities into waterways or sewer systems. Neutralize with sodium thiosulfate prior to disposal.

Hazardous Substance Under "Superfund": No

Container Disposal: In a similar manner as other plastic bottles.

SECTION VIII: SPECIAL PROTECTION

Respiratory Protection (Specify type): n/a

Protective Gloves: n/a

Ventilation: **Local Exhaust:** n/a

Mechanical (General): n/a

Other: n/a

Eye Protection: n/a

Other Protection Equipment: n/a

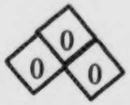
SECTION IX: SPECIAL PRECAUTIONS

Precautions to be Taken in Handling and Storage: n/a

Other Precautions: n/a

National Fire Protection Association (NFPA)

Rating Degrees of Hazard:



Locate and Read the MSDS

Every workplace should have Material Safety Data Sheets and guidelines on proper cleaning procedures. These guidelines should outline techniques for cleaning the reception area, laboratory, kennel, exam rooms, and animal cages or pens. Strict adherence to these cleaning techniques should provide for a healthy work environment. Training and periodic evaluation of all personnel involved in cleaning are important.

Employees should know the proper use of disinfectants and cleaning techniques. Misusing or improperly handling disinfectants and antiseptics can be hazardous to the handler, fellow workers, and animals. Always read the label carefully before using any disinfectant solution or antiseptic and use it for its intended purpose ONLY. Every employee should know the contents and location of the MSDS book in case of an emergency caused by overexposure of a cleaning product. The veterinary clinic must maintain a file of MSDS. Find out where the information is kept by asking the staff member in charge of communicating hazards or the veterinarian or veterinary technician.

Test Your Knowledge: Complete the following activity sheet to test your knowledge and understanding of the materials you have studied in this lesson.

Lesson 1: Hazardous Materials

Activity Sheet

1. List three types of hazardous materials.

   a. ______________________________

   b. ______________________________

   c. ______________________________

2. List three categories of infectious waste.

   a. ______________________________

   b. ______________________________

   c. ______________________________

3. Describe the method of disposal for contaminated sharps.

   ____

   ____

   ____

4. What are three methods of decontamination of infectious or medical wastes?

   a. ______________________________

   b. ______________________________

   c. ______________________________

5. Draw an illustration of the biohazard label.

6. What does EPA stand for?

   ____

7. What is the Hazard Communication Standard?

8. What are the categories of information included on a MSDS?

   a.

   b.

   c.

   d.

   e.

   f.

   g.

   h.

9. Describe three OSHA requirements that pertain to the veterinary clinic setting.

   a.

   b.

   c.

Clinical/Laboratory Activities

1. Find out who the Hazard Communication Coordinator (HCC) is for the clinic where you are working.
2. Locate the book containing the Material Safety Data Sheets. Read the MSDS for the chemicals or products that you will be using at the clinic.
3. Discuss the clinic's procedures for disposing of hazardous materials and medical waste with the veterinary technician or veterinarian.

Lesson 2:
Maintaining a Safe Environment

Objectives:

A. Identify modes of transmission for diseases.

B. Maintain good personal hygiene.

C. Maintain a safe environment for animals and workers.

D. Follow clinic procedures for cleaning.

E. Differentiate antiseptic from disinfectant.

F. Handle antiseptics and disinfectants safely (dos and don'ts).

G. Differentiate cleaning from sterilizing.

Key Terms:

- Cross contamination
- Contact transmission
- Direct contact
- Indirect contact
- Pathogens
- Droplet contact
- Airborne transmission
- Vectors
- Cleaning
- Disinfecting
- Sterilizing
- Surface disinfectants
- Antisepsis
- Asepsis
- Exogenous
- Endogenous
- Aseptic techniques
- Antiseptics

Factors such as the environment, presence of a viable organism, and susceptibility of the host contribute to the spread of any disease. The veterinary team has the most control over environmental factors. The environment of the veterinary practice should reflect professionalism and quality. A clean and safe setting will make clients feel confident about bringing their pets. A veterinary practice may have the finest veterinarians and staff, but if the clinic is dirty and dingy, clients will not feel comfortable bringing their pets there. Cleaning and disinfecting equipment and facilities for animal examination, housing, and transportation greatly enhances disease prevention and control.

Modes of Disease Transmission

Members of the veterinary team must understand infection control. They must intelligently and conscientiously take steps to control **cross contamination**, the passing of organisms from one animal to another, and to prevent the spread of disease throughout the veterinary hospital or clinic. Disease transmission occurs in two ways: contact and airborne.

Contact transmission is further divided into direct contact, indirect contact, and droplet contact.

1. **Direct contact** - Transmission occurs from contacting or touching the animal. Transferring microorganisms from an infected animal to another animal is the main source of cross contamination.

2. **Indirect contact** - Transmission occurs from contact with items contaminated with a patient's organisms. Indirect contact can result from the use of contaminated needles, instruments, equipment, and surfaces.

These items may have body fluids from the animal that carry a variety of **pathogens**, any microorganism that can cause disease.

3. **Droplet contact** - Transmission occurs when the animal coughs, sneezes, or creates large droplet-sized particles. With droplet contact, the microorganism is only carried a short distance - within three feet, unlike airborne transmission, which transports particles a great distance.

Airborne transmission occurs when infectious microorganisms distribute into the air from the residue of evaporated droplets. These microorganisms can stay suspended in the air for a long time and can travel great distances. They can be inhaled or deposited in an open wound.

Another method of transmission is **vectors**. Vectors are carriers, often a tick or mosquito, that transfers infective agents from one host to another.

Personal Hygiene

There are techniques that the members of the veterinary team should use to prevent contamination and transmission of disease. Specific practices used by the clinic or hospital reduce or eliminate incidents of exposure. Hand washing is the number one, most important protective barrier and preventive of cross contamination. Use antiseptic soap to wash hands thoroughly.

Other practices include the proper disposal of hazardous materials as discussed in Unit V, Lesson 1, and careful personal habits. Employees should eat or drink only in a designated area, and should never touch their eyes, nose, hair, mouth, or mucous membranes while wearing contaminated gloves.

Procedures for Cleaning

Cleaning is the process of removing dirt and organic matter such as feces, urine, and blood.

Disinfecting is the process of destroying microorganisms on nonliving objects. The three categories of disinfection include physical disinfecting achieved through sunlight and high temperature, chemical disinfecting achieved through solutions and gases, and biological disinfecting achieved through metabolites of microorganisms. Disinfection does not destroy some viruses and spores. The most common method of disinfection in veterinary medicine is chemical. Disinfecting equipment and instruments is only used if unable to sterilize.

Sterilizing is the process of destroying all forms of life. Sterile is an absolute term; an object cannot be "almost" sterile. Sterilization begins with cleaning and is then accomplished with heat and chemicals. Heat sterilization is the most common method used in veterinary medicine. The three forms of heat sterilization are autoclaving, the use of superheated steam under pressure, chemical vapor in which chemical steam is used instead of water, and dry heat or conventional heat that is similar to an oven. Preparing instruments for sterilization is discussed in Unit VIII, Lesson 2.

Disinfectants

The purpose of disinfection is to reduce the number of microorganisms when sterilization is not possible. **Surface disinfectants** are applied to inanimate objects such as counters, cages, examination tables, instruments, bathtubs, or other equipment that cannot be sterilized. Veterinary clinics use various disinfectants.

Sodium hypochlorite is a common household bleach. It can disinfect surfaces in 3-30 minutes. Bleach has a strong odor. It can corrode some metals, can be caustic to skin and eyes, and can eventually crack plastic. Bleach should be mixed daily to maintain its antiviral properties. To be effective, bleach dilutions must be accurately measured depending on their uses.

Iodophors are iodine solutions mixed with a detergent. Iodophors are available as a disinfectant for hard surfaces and as a surgical antiseptic scrub. Hard water inactivates Iodophors, so they must be mixed with soft or distilled water. Iodophors may corrode or discolor certain materials.

There are many surface disinfectants available for the veterinary market. The type of disinfectant used depends upon the type of practice. In addition to reading the Material Safety Data Sheet (MSDS) discussed in the previous lesson, always read the manufacturer's recommendations for use and mixing before using any product.

Antiseptics

Antisepsis is the process of applying a preparation to the surface of living tissue to prevent infection, also called sepsis, and inhibit the growth of microorganisms.

Asepsis is freedom from infection. Preoperative preparation of the surgical site and topical treatment of wounds are means of accomplishing antisepsis. The source of microorganisms necessary to cause infection may be either **exogenous** or **endogenous**. Exogenous is environmental, and endogenous originates from within the body of the animal.

Aseptic techniques are steps and procedures that prevent contact with microorganisms. These include proper preparation of surgical sites, equipment, instruments, and personnel. **Antiseptics** are preparations applied to living tissue to inhibit the growth and development of microorganisms and not necessarily kill them. Commonly used antiseptics in veterinary medicine include Nolvasan and Betadine.

Cleaning, disinfection, antisepsis, and sterilization are all important processes necessary for maintaining a healthy environment.

Dos and Don'ts of Using Antiseptics and Disinfectants

Dos

1. Always read and follow manufacturer's directions and recommendations.
2. Only use antiseptics and disinfectants for their intended purpose.
3. Wear gloves when handling disinfectants.

Don'ts

1. Mix different disinfectants or antiseptics.
2. Use products for purposes other than their intended use.

Test Your Knowledge: Complete the following activity sheet to test your knowledge and understanding of the materials you have studied in this lesson.

Lesson 2: Maintaining a Safe Environment

Activity Sheet

1. List three factors that contribute to the spread of disease. Circle the factor that the veterinary staff can most control.

   a. ______________________________

   b. ______________________________

   c. ______________________________

2. List three modes of disease transmission.

   a. ______________________________

   b. ______________________________

   c. ______________________________

3. Describe the three types of contact transmission.

   a. ______________________________

   ____

   b. ______________________________

   ____

   c. ______________________________

   ____

4. What is airborne transmission?

   ____

   ____

   ____

5. What is the most important protective barrier and preventive of cross contamination?

   ____

6. List three actions that demonstrate good personal hygiene that all veterinary staff should use.

   a. ______________________________

   b. ______________________________

   c. ______________________________

7. What is the difference between an antiseptic and a disinfectant?

   ____

   ____

   ____

   ____

8. What is the difference between cleaning and sterilizing?

   ____

   ____

   ____

   ____

9. List three dos for using antiseptics and disinfectants.

   a. ______________________________

   b. ______________________________

   c. ______________________________

10. List two don'ts for using antiseptics and disinfectants.

   a. ______________________________

   b. ______________________________

Match the terms in Column A to its definition in Column B. Write the appropriate letter in the blank.

Column A

_____11. Asepsis

_____12. Exogenous

_____13. Direct contact

_____14. Vectors

_____15. Disinfecting

_____16. Aseptic techniques

_____17. Droplet contact

_____18. Indirect contact

_____19. Cross contamination

_____20. Sterilizing

_____21. Antiseptics

_____22. Endogenous

_____23. Cleaning

Column B

a. Carriers, such as ticks or mosquitos, that transfer infective agents from one host to another.

b. Passing organisms from one animal to another.

c. Preparations applied to living tissue to inhibit growth and development of microorganisms but not necessarily kill them.

d. Process of removing dirt and organic matter such as feces, urine, and blood.

e. Source of microorganisms necessary to cause infection originates from within the body of the animal.

f. Process of destroying all forms of life.

g. Transmission occurs from contact with items contaminated with a patient's organisms.

h. Source of microorganisms necessary to cause infection is environmental.

i. Steps and procedures that prevent contact with microorganisms.

j. Transmission occurs when the animal coughs, sneezes, or creates large drops of particles.

k. Freedom from infection.

l. Process of destroying microorganisms on nonliving objects.

m. Transmission that occurs from contacting or touching an animal.

Clinical/Laboratory Activities

1. Discuss clinic procedures for cleaning with the veterinarian or veterinary technician.

2. Prepare disinfectants and antiseptics for different cleaning tasks. Read and follow the manufacturer's directions and recommendations on all antiseptic and disinfectant product labels.

Lesson 3:
Cleaning, Disinfecting, and Maintaining Clinic Areas

Objectives:

A. Clean and routinely check for cleanliness of outdoor exercise areas and the parking lot.

B. Clean and routinely check for cleanliness of the reception area/waiting room.

C. Clean and routinely check for cleanliness of exam room.

D. Clean and routinely check for cleanliness of surgical and treatment areas.

E. Clean, disinfect, and routinely check for cleanliness of floors and corridors.

F. Remove hair/debris from the drain grate in bathtubs and floor drains. Routinely check bathtubs for cleanliness.

Key Terms:

- Surgical areas
- Immune system

Lasting impressions are made within the first few moments that the client sees any part of the veterinary clinic or staff. For this reason, all areas inside and outside of the clinic should be clean, and all members of the veterinary team should be clean, well-groomed, and wearing appropriate attire. Going through the motions of cleaning is not enough. It is important that the animal care assistant be a thorough cleaner. Always check for cleanliness after cleaning.

Maintaining the Outdoor Exercise Areas and Parking Lots

The first area the client sees is the outside of the clinic. The parking lot should be free of litter, and the yard should be well manicured and free of feces. When exercising animals in these areas, always pick up animal droppings. Depending on the clinic, the animal care assistant may be responsible for maintaining the outside areas.

Maintaining the Reception Area and Corridors

The veterinary staff should think of the reception area as a client greeting place rather than a waiting room. Outpatient areas of the clinic should be clean, odor-free, and quiet. Client reading material should be well-maintained, not torn or outdated. Check the orderliness of product displays and reading material in the reception area. The reception area should be checked periodically throughout the day and cleaned and tidied as needed. Veterinary team members should not eat, drink, or smoke in reception areas. Because of hair and dust, dry or dust mopping and vacuuming are required in the reception area and corridors multiple times throughout the day.

Maintaining the Examination Room

The examination room should be a welcome place for clients and their pets, since they spend most of their time in this room. These rooms should be cleaned multiple times a day. The rooms must always be clean, uncluttered, and in good repair. Clients will remember dirty counters and floors, and items that are broken. Examination equipment should be out of sight or secured to prevent clients or their children from handling them. The exam table should be cleaned and disinfected after each patient and the floor swept if necessary.

Always restock supplies such as gauze, cotton, and paper towels before these items run out in the examination, treatment, and surgical areas. Refill disinfectant containers when half empty.

Maintaining Treatment and Surgical Areas

In most clinics, the treatment room is the hub of the hospital. Therefore, it is prone to being cluttered and unclean. Everyone using this room should try to keep it clean and tidy. However, one person may be assigned this responsibility. The treatment room must be presentable at all times. This may require cleaning and disinfecting several times a day. It is recommended that counters and sinks be disinfected twice daily, exam tables after each use, and floors once daily. Floors should be swept or vacuumed as needed. Walls should be disinfected at least once a week.

Surgical areas may include the treatment room or preparation area, operating room, and recovery area. Many animals are brought into these areas because of injury or illness. If these areas are not cleaned following procedures, it raises the risk of transmission of disease to other animals treated in these areas of the clinic. An animal undergoing treatment or surgery may have a compromised **immune system**, the body's natural system of protecting itself from invading micro-organisms. Procedures may release infected fluids from animals being treated and open wounds on animals are susceptible to infection. Cleanliness in these areas cannot be over stressed. All clipped hair should be vacuumed or swept immediately.

Any cleaning supplies and equipment used in the operating room are restricted to use in that room only. To prevent the spread of disease to other areas of the clinic and to keep surgical areas sterile, DO NOT use mops or brooms from other areas of the clinic in this room. All surfaces of the operating room should be disinfected after each procedure. This includes the area under the surgery table and the surgical lights.

Maintaining Bathtub and Tub and Floor Drains

Most practices are equipped with a bathtub for bathing and dipping animals. Each time the bathtub is used for any procedure, any organic matter or hair should be removed from the drain before disinfecting the bathtub and drain.

Test Your Knowledge: Complete the following activity sheet to test your knowledge and understanding of the materials you have studied in this lesson.

Lesson 3: Cleaning, Disinfecting, and Maintaining Clinic Areas

Activity Sheet

1. Which room in the hospital is considered to be the "hub"? Why is it important to keep this area clean?

2. How often should sinks and counters be disinfected?

3. How can the animal care assistant maintain the reception area?

4. Why is the mop or broom used in the surgical area not used to clean any other area of the clinic?

Clinical/Laboratory Activities

1. Surgery has just been completed, and the assistant is cleaning the surgery room. The mop that is normally used in the surgery room has disappeared. Should the assistant use the mop from the kennel area? Discuss your answer with your clinical supervisor.
2. Discuss with the veterinarian or veterinary technician the cleaning products and disinfectants used for different areas of the clinic.
3. Clean the clinic areas as directed by the veterinarian or veterinary technician. Routinely check all clinic areas for cleanliness.

Lesson 4:
Zoonotic Diseases

Objectives:

A. Define zoonosis or zoonotic disease.

B. Identify common zoonotic diseases.

C. Identify modes of transmission of zoonotic diseases.

D. Identify steps in preventing the transmission of zoonotic diseases.

Key Terms:

- Zoonosis or zoonotic disease
- Bacteria
- Anthrax
- Brucellosis
- Undulant fever
- Campylobacteriosis
- Cat scratch fever
- Chlamydiosis
- Leptospirosis
- Salmonellosis
- Plague
- Tuberculosis
- Tularemia
- Fomites
- Virus
- Encephalitis
- Sleeping sickness
- Rabies
- Hydrophobia
- Fungi
- Ringworm
- Parasitic diseases
- Parasites
- Ancylostomiasis
- Toxocariasis
- Toxoplasmosis
- Sarcoptic mange
- Scabies

Zoonotic Disease

Zoonosis (zō-ə-′nō′-səs) or **zoonotic** (zō-ən-′nä-tik) **disease** is a communicable or contagious disease which, strictly speaking, can be transmitted from vertebrate animals to humans. In true zoonoses, the animals are essential in maintaining the infection in nature while humans are simply an accidental host. The term zoonosis is sometimes used to include diseases that are common to humans and animals. In this other group of diseases, both humans and animals may contract the infection from the same source such as water, soil, invertebrate animals, and plants. Zoonotic diseases are transmitted by direct contact with infected animals or by vectors. A vector is an insect or other living carrier that transports an infectious agent from an infected animal or its wastes to a susceptible individual or its environment. Large-scale eradication programs have decreased the incidence of some zoonotic diseases such as animal tuberculosis, anthrax, and brucellosis. The four categories of zoonotic diseases are bacterial, viral, fungal, and parasitic. This lesson discusses the most common zoonotic diseases encountered by veterinary personnel. All veterinary staff should be familiar with possible zoonotic diseases and special precautions for avoiding exposure.

Bacterial Diseases

Bacterial diseases are diseases caused by **bacteria**. Bacteria are one-celled micro-organisms that contain no chlorophyll. They multiply by a simple division process and can be seen only by using a microscope.

Anthrax (an′thraks) is a disease of all warm-blooded animals caused by the bacteria *Bacillus anthracis*. It is characterized by acute fever and blood poisoning and is rapidly fatal. Sudden death may be the only symptom. The organism forms spores when it contacts the air after discharging from an infected animal or when a carcass is opened. Spores persist for long periods of time in dry feeds, animal by-products, soil, or on contaminated objects. Cattle, horses, sheep, and goats are infected by grazing contaminated areas. Humans are exposed by inhalation of the spores or when spores contact broken skin. Insects and scavengers can contribute to the spread of anthrax. In an outbreak, the appropriate regulatory official must be notified. Isolation of infected animals and early treatment with antibiotics is essential. Prompt disposal of contaminated materials and carcasses is done by cremation for deep burial. Disinfection and insect and scavenger control help minimize its spread; workers handling suspect materials should wear protective masks and gloves. Well animals are immunized in the evemt of an outbreak or when they graze areas that have had anthrax in the past. Areas of the United States which still have occasional outbreaks include South Dakota, Nebraska, Arkansas, Mississippi, Louisiana, Texas, and California.

Brucellosis (brü-sə-'lō-səs) is caused by any one of several species of brucella organisms: *Brucella abortus* (cattle strain), *Brucella canis* (canine strain), *Brucella melitensis* (sheep strain), and *Brucella suis* (swine strain). Brucella organisms infect the reproductive tract and mammary glands of animals. The organism can cause reproductive failure or abortion of the fetus. Brucellosis is transmitted from animal to animal and from animal to humans by direct contact. In animals, transmission may occur orally or sexually. Human beings can become infected by ingesting raw milk or meat or by handling fetal membranes or fetuses or by accidentally injecting brucella vaccine into themselves. Brucellosis in humans is called **undulant fever**, a chronic condition characterized by waves of fever with chills and sweating episodes, general weakness, and weight loss. The symptoms may last from a few weeks or months to several years. Federal and state agencies are effectively working to eradicate bovine brucellosis through a mandatory testing and vaccination program. Animal care assistants involved in food animal practices should be thoroughly acquainted with rules and regulations. In small animal practice, dogs should be tested before breeding and neutered if they test positive. Cats are naturally resistant to brucella. Humans can avoid infection with brucellosis by: 1) wearing gloves when handling fetal tissues; 2) avoid ingestion of raw milk or meat; 3) handling brucella vaccine and blood for brucella testing with extreme care; and 4) observing good sanitation procedures.

Campylobacteriosis (kam"pĭo-lo-bak"ter-e-o′-sis), commonly known as vibriosis, is caused by the bacteria *Campylobacter jejuni*. Infected animals may or may not show signs of illness. Infected cattle and sheep suffer from infertility and abortion. Small animals suffer from diarrhea when clinically infected. The infection is transmitted from animal to animal either by sexual or direct contact. Possible sources of infection include dogs, cats, and birds. Campylobacter in humans manifests as severe diarrhea with prolonged fever and abdominal pain; fetal death sometimes occurs in pregnant women with the infection. It is assumed that humans may be infected by direct contact with infected animals, especially their manure and placentas, or by consuming contaminated water, milk, meat, and garden vegetables. Annual vaccination of female cattle and sheep and breeding only male animals free of Campylobacteriosis helps control the spread of disease. Animal caretakers can lessen their risk of exposure to Campylobacteriosis by avoiding contact with infected animals, their manure and placentas; wearing protective clothing and gloves and using proper disinfection methods. Contaminated water, milk, meat, and vegetables should not be consumed.

Cat scratch fever is a human infection caused by a bite or scratch from healthy cats who harbor the bacterium *Rochalimaia henselae* in their mouths and on their claws. Human symptoms include inflammation and swelling around the wound, fever, headache, and malaise. Most cases are not serious and resolve spontaneously. Care in handling cats to avoid bites and scratches and proper disinfection of such wounds if they occur are the best ways to avoid transmission.

Chlamydiosis (klah-mid″e-o′-sis), commonly known as parrot fever, is caused by the bacteria *Chlamydia psittaci.* Chlamydia is primarily a disease of birds transmitted through feces, either by direct contact or inhalation of dried feces. Domestic birds are more often infected than wild birds; most infections are latent and inapparent but stress factors can cause outbreaks. Symptoms in birds include fever, diarrhea, anorexia, emaciation, and respiratory distress. Chlamydia can cause abortion in sheep and cattle, conjunctivitis in guinea pigs, and conjunctivitis and pneumonitis in cats. Infection in humans is rare and can be confused with common respiratory infections. There is no vaccine; control is achieved by quarantine of suspect birds and treating birds stressed by shipping with antibiotics. Birds with diarrhea, cats with respiratory infections, and cattle and aborting sheep are chlamydiosis suspects. The animal caretaker should wear gloves and a mask to avoid contact with or inhalation of dried bird feces. Use care to not transfer respiratory secretions from a sick cat's eyes or nose to your own eyes. Wear gloves when handling fetal tissues from a ruminant that has aborted. Proper hand washing and disinfection are important. Any persistent eye infections or respiratory infections should be reported to a physician along with pertinent history, such as possible exposure to chlamydiosis.

Leptospirosis (lep-tə-spī-′rō′-səs) is caused by many different *Leptospira* species and affects both domestic and wild animals. Clinical disease may be seen in cattle, swine, sheep, goats, horses, dogs, and rarely in cats; the most common symptoms are fever and anorexia but the gastrointestinal tract and kidneys may also be affected. Wildlife, especially rodents, may show no symptoms but shed the organism in their urine. The primary mode of infection is by exposure to water, soil, and foods contaminated with urine; the infection enters humans and animals, directly or indirectly, through the skin and the oral and nasal mucosa. Humans are accidental hosts; visible symptoms include a sudden onset of fever, headache, nausea, vomiting, and diarrhea which may last weeks to months. Vaccination of swine, cattle, and dogs effectively prevents the disease. The risks of exposure to leptospirosis can be minimized by wearing protective clothing, gloves and mask, and avoiding contact with water, soil, and foodstuffs contaminated with urine. Using good hand washing and proper disinfection techniques are important.

Salmonellosis (sal″mo-nel-o′sis) can be caused by any one of more than 2,000 different species of *Salmonella. Salmonella typhimurium* and *Salmonella enteritidis* are the most common species that affect humans. There is a broad range of animal hosts, both domestic and wild and include mammals, birds, and reptiles; infections may cause a diarrhea of varying degree, but many individuals become intermittent carriers and shed the organism in their feces. The high rate of infection in pet turtles has led to restrictions on their importation and sales. Infection is transmitted to humans and animals by food contaminated with feces. Human cases of diarrhea caused by salmonella occur within 8-48 hours of ingesting contaminated food. Any animal with diarrhea is a potential salmonella case. Young calves, piglets, lambs, and foals subjected to other stresses such as crowding, shipping, and vaccination or deworming are especially susceptible. Hospitalized horses for prolonged surgical procedures are commonly infected with salmonella. Avian species of salmonella are transmitted primarily by direct egg transmission; transmission may also occur by direct or indirect contact with contaminated feces, which causes a high mortality rate in young chicks. Diarrhea in guinea pigs, rats, and mice may be due to salmonella; reptiles with abscesses may be sources. Rabbits and turtles with or without obvious illness may be sources. Dogs and cats can be infected by ingesting contaminated foodstuffs or tissues. Prompt treatment with antibiotics can successfully treat salmonella. It can remain in a carrier state so isolation is important. Recovered adult sheep and cattle can shed the organism for up to 10 weeks and horses for up to 14 months. Feces of infected animals can contaminate feed, water, milk, fresh and processed meats from slaughterhouses, eggs, plant and animal products used as fertilizers or feedstuffs, pasture, and inert materials. Testing of hatchery poultry and hospitalized horses by blood tests or fecal culture is conducted routinely to minimize spread of disease. Wear gloves and wash hands well when in contact with fecal material. Disinfect and dispose of contaminated materials carefully and protect food and water from fecal contamination. Avoid exposure to contaminated water, milk, meat, and eggs.

Plague is a flea-transmitted disease of rodents and rabbits caused by *Yersinia pestis*. While humans are usually exposed by contact with infected rodents, their carcasses or their fleas, cats and dogs are now recognized as hazards as well. Animals with fleas, high fevers, and respiratory signs are suspect. Human symptoms include swollen, painful lymph nodes, fever, chills, headache, and exhaustion. Preventive measures include rodent and flea control to minimize risks of exposure.

Tuberculosis (tu-ber'ku-lo'sis), also called TB, is an infectious disease caused by the bacterium *Mycobacterium*. Three main types are recognized: human, bovine, and avian. All three types can cause disease in species other than their own. Tuberculosis can occur in most any vertebrate animal, but the main reservoirs in nature are humans, cattle, and birds. Badgers, buffalo, opossums, deer, and wild pigs have also been incriminated. Tuberculosis is usually a chronic, debilitating disease but may also be acute and rapidly progressive. General symptoms include weakness, poor appetite, weight loss, low-grade fever, and respiratory distress with a hacking cough. An effective therapy is not available but TB has almost been eliminated from livestock in the United States by the test-and-slaughter method of control. The tuberculin skin test is done routinely in cattle, swine, chickens, and in suspect goats and sheep. While dogs are susceptible, tests are not often trusted; destruction of dogs associated with infected cattle herds is recommended because they can pass the disease via respiratory secretions to humans, especially children. Cats do not get the respiratory form of the disease but can develop intestinal lesions from ingesting contaminated milk; cats associated with infected herds should also be destroyed. Live birds and non-human primates can be tested for TB and are destroyed if infected. New arrivals are quarantined for 60-90 days before being added to a zoo or pet store population. Animal caretakers should wear protective masks and gloves when exposed to possible carriers. They should also be tested periodically for early detection of an infection.

Tularemia (too″lah-re′me-ah), also known as rabbit fever, is caused by a bacterial septicemia (blood poisoning) caused by *Francisella tularensis*. Tularemia is primarily a disease of wild rodents and rabbits but is also seen in domestic sheep. Carnivores are rarely affected. Tularemia can be transmitted by direct contact with infected carcasses, inhalation of the organism, or via blood-sucking insects including ticks, fleas, mosquitoes, and horseflies. The organism can survive for six months on **fomites**, inanimate objects or materials, and three months in frozen carcasses. Human symptoms include fever, chills, weakness, headache, vomiting, and muscle pain. Animal handlers should minimize their exposure to the blood-sucking parasites of rabbits and sheep. Hunters should wear masks and gloves when skinning wild rabbits and, if at all possible, avoid consumption of suspect animals.

Viral Diseases

Viral diseases are diseases caused by a **virus**. A virus can be either a very simple microorganism or a very complex molecule that can grow and multiply only in living cells.

Encephalitis (en′sef-ah-li′tis), commonly known as **sleeping sickness**, is a disease caused by five strains of *Trypanosoma* viruses: Eastern equine encephalitis (EEE), Western equine encephalitis (WEE), Venezuelan equine encephalitis (VEE), St. Louis equine encephalitis (SLEE), and California equine encephalitis (CEE). Infections are generally subclinical in domestic and wild animals but can cause fatal central nervous system infections in human beings and horses. Subclinically infected humans, pigs, domestic ruminants, and dogs may serve as a reservoir; the organism is transmitted by the mosquito vector. Humans can be infected with *Trypanosoma* virus encephalitis by being bitten by the mosquito vector that has contacted an infected animal. Preventative vaccine is available and recommended for horses but is not available for other species. The use of insect repellent and protective clothing helps prevent exposure in humans from other susceptible animals, including wildlife, domestic pigs and ruminants, and dogs.

Rabies, also known as **hydrophobia** (hi″dro-fo′be-ah), is dreaded because of the terrible symptoms and almost certain death sentence associated with the disease. Rabies is a disease of warm-blooded mammals only; birds and reptiles are not affected. The wildlife population serves as the reservoir; skunks, bats, raccoons, and wild canines are most commonly incriminated as carriers. The virus is shed in the saliva of infected animals. Clinical rabies can take two clinical courses. The "furious form" of rabies is the classic "mad-dog syndrome" in which the animal becomes progressively more vicious and aggressive and avoids food, water, and contact with others. Any noise or movement may provoke a bite. Muscular incoordination and convulsions and death are the result of progressive paralysis. Rabid animals usually die within 10 days of the onset of symptoms. The "dumb form" or "paralytic form" of rabies is characterized by paralysis of the jaw muscle and throat, resulting in profuse salivation, inability to swallow, and dropping of the lower jaw. These animals are not vicious and are unable to bite. Paralysis progresses rapidly and death occurs within a few hours. Most human cases of rabies are the result of the bite of an infected animal, but exposure can occur by contact of saliva with broken skin or mucous membranes or, more rarely, inhalation of virus in the air in bat caves or laboratories. Local laws dictate specific "post-bite" precautions that should be taken when people in the general population are bitten. Animal caretakers who have been bitten by an animal should clean and disinfect the wound and report the bite to the veterinarian who will consider the risk factors and recommend the appropriate course of action. Suspect animals are either quarantined for observation for 10 days or euthanized and tested for rabies. The only way rabies can be diagnosed is by documenting behavior changes consistent with rabies and then, if they occur, euthanizing the animal and isolating the virus from brain tissue. Rabies can be effectively prevented by vaccination of at-risk animals including dogs, cats, cattle, and horses. Many animal health care professionals take pre-exposure rabies vaccinations to reduce their risks.

Fungal Diseases

Fungal diseases are diseases caused by infectious **fungi**. Fungi are lower plants that lack chlorophyll, a class of organisms that includes molds, mildews, mushrooms, and yeast.

Ringworm is more technically known as dermatophytosis (der″mah-to-fi-to′sis) and is caused by several species of fungi called *Dermatophytes*. The most common dermatophytes are *Microsporum* and *Trichophyton*. Cats, dogs, cattle, and rodents serve as the most common sources of infection and may or may not show obvious lesions. When lesions are apparent, they begin as a small, round, scaly patch of hair loss which spread slowly and may or may not be itchy or painful. Dermatophytosis is transmitted by direct contact with infected animals or contaminated fomites such as grooming tools or halters. Washing hands after handling animals and cleaning and disinfection of instruments used will greatly reduce the incidence of ringworm. Consult a physician if you suspect you are developing ringworm.

Parasitic Diseases

Parasitic diseases are diseases caused by parasites. **Parasites** are organisms (plant or animal) which must depend on another living organism for their survival. Parasites usually, but not always, cause harm to their host organism.

Ancylostomiasis (an′sĭ-los′to-mi′ah-sis) is also known as creeping eruption, and is a syndrome in human beings caused by infective larvae of the common hookworm species, *Ancylostoma*, of dogs and cats. Infected animals may only be identified by microscopic fecal examination or may suffer from bloody diarrhea. Creeping eruption develops when hookworm larva burrows through a person's skin, causing a stinking sensation, followed by dermatitis, or inflammation of the skin. To avoid infection, prevent hookworm infestation in pets, discard pet feces daily, wash hands after handling pets or their feces, and do not walk barefoot where animals have defecated.

Toxocariasis (tok″so-ka-ri′ah-sis), also called visceral larva migrans, is a disease generally seen in young children. It is an infection with the larvae of *Toxocara canis* and *Toxocara cati*, more commonly known as roundworms in the dog and cat. Most puppies and kittens are infected at birth. Dogs and cats shed the eggs of this parasite in their feces which are a source for human infection. Roundworm eggs may survive for years in the soil; children may be infected by eating dirt or putting dirty objects in their mouths. After ingestion, the eggs hatch and larvae migrate through human tissues causing skin rashes, respiratory symptoms, and liver and eye problems. Transmission may be prevented by maintaining good personal hygiene, deworming pets regularly, and supervising children playing in areas frequented by dogs and cats.

Toxoplasmosis (tok″so-plaz-mo′sis) is a disease caused by a protozoal parasite called *Toxoplasma gondii* identified in approximately 200 species of mammals and some birds. Domestic and wild felines are the usual reservoirs; they become infected by eating raw meat, birds, or mice and then shed the organism in their feces. Cats and most other infected animals almost never show clinical signs. Sheep may become seriously infected by grazing on contaminated pastures. Human beings become infected by ingesting or inhaling the organism, usually while cleaning litter pans or eating insufficiently cooked meat. Pregnant women are most at risk for serious complications resulting from toxoplasmosis. The organism has an affinity for fetal tissues and can cause birth defects or fetal death. People with compromised immune systems may also suffer serious complications from exposure to toxoplasmosis. Preventive measures include cooking meats thoroughly, maintaining good personal hygiene, and discouraging pregnant women from cleaning litter pans.

Sarcoptic mange (särkop′tik mānj) is caused by a mite, an external parasite of animals that can survive on many hosts. **Scabies** (ska′bēz) is the human form of the disease. Sarcoptic mange mites include mites such as the Notoedres - the head mite of cats, Otodectes - the ear mite of dogs and cats, and Cheyletiella - the walking dandruff seen most often on cats. The sarcoptic mange mite burrows in the skin causing intense itching with subsequent hair loss and inflammation of the skin of both animals and humans. They can live indefinitely on an animal and in its bedding until appropriately treated and are highly contagious to other animals. Human beings are infested by direct contact with an infested animal and suffer a similar itchy rash, often on the forearms and abdomen. Contact your physician if you suspect exposure to sarcoptic mange. The best tools for control include prompt diagnosis and treatment of the mite, isolation of affected animals until treated, and proper disposal of contaminated bedding and clothing.

Test Your Knowledge: Complete the following activity sheet to test your knowledge and understanding of the materials you have studied in this lesson.

Lesson 4: Zoonotic Diseases

Activity Sheet

1. Define zoonosis or zoonotic disease.

   ____

   ____

2. List the four categories of zoonotic diseases described with an example of each.

   a. ____

   b. ____

   c. ____

   d. ____

3. List three preventative actions you should take to avoid becoming infected by most zoonotic diseases.

   a. ____

   b. ____

   c. ____

Match the zoonotic disease in Column A to its characteristics in Column B.

Column A

____ 4. Chlamydiosis

____ 5. Rabies

____ 6. Ringworm

____ 7. Toxocariasis

Column B

a. Symptoms in humans include skin rashes, respiratory symptoms, liver and eye problems.

b. Symptoms in birds include fever, diarrhea, anorexia, emaciation, and respiratory distress. In humans it is like a common respiratory infection.

c. Symptoms in humans are lesions that are small, round, scaly patches of hair loss.

d. Symptoms include foaming at the mouth, inappropriate aggression, or inability to swallow.

Match the zoonotic disease in Column A to its mode of transmission in Column B.

Column A

____ 8. Campylobacteriosis

____ 9. Tularemia

____ 10. Leptospirosis

____ 11. Cat scratch fever

____ 12. Ancylostomiasis

____ 13. Salmonellosis

____ 14. Toxoplasmosis

Column B

a. Infective larvae of the common hookworm species of dogs and cats burrow through a person's skin.

b. Domestic and wild felines become infected by eating raw meat, birds, or mice and then shed the organism in their feces. Humans ingest or inhale the organism.

c. Infection is transmitted from animal to animal either by sexual or direct contact. It is assumed that humans are infected by direct contact with infected animals, especially their manure, placentas, or by consuming contaminated water, milk, meat, or garden vegetables.

d. Flea-transmitted disease of rodents and rabbits. It is transmitted to humans by direct contact with infected rodents, their carcasses or their fleas.

e. The primary mode of transmission is exposure to water, soil, and foods contaminated with urine. Humans and animals are infected directly or indirectly through skin and oral and nasal mucosa.

f. This infection is found in ticks, mosquitoes, horseflies, and fleas. It is transmitted by direct contact with fluids, tissues, and feces of infected animals, improperly cooked meat, and inhalation of infectious dust.

g. Humans are infected by a bite or scratch from healthy cats that harbor the bacterium in their mouths and on their claws.

Clinical/Laboratory Activities

1. Ask other veterinary staff if they have ever had a zoonotic disease.
2. Discuss with the veterinarian or veterinary technician the most unusual disease he or she has seen while practicing. Find out how often the zoonotic diseases discussed in this lesson are treated.

Lesson 5:
Isolation Procedures

Objectives:

A. Define infectious disease.

B. Identify different levels of infectious diseases.

C. Define the terms isolation and quarantine.

D. Identify diseases that require isolation.

E. Implement isolation procedures.

Key Terms:

- Infectious diseases
- Nosocomial
- Isolation
- Quarantine
- Incubation period
- Reportable

Infectious Diseases

Infectious diseases are diseases that are capable of being spread from one animal to another. Contagious is another term for infectious. Infectious wastes, discussed in Unit V, Lesson 1, are contaminated materials capable of causing disease in a susceptible animal. Many of the symptoms of infectious diseases are also seen with non-infectious diseases. The following symptoms may indicate a potentially infectious disease: acute onset of coughing, sneezing, vomiting or diarrhea, fever, and often a pus-like discharge.

The age of the animal and its history of exposure to an infectious disease are helpful for determining the possibility of an infectious disease. Symptoms occurring in more than one animal may suggest an infectious disease. Vaccination helps to prevent many infectious diseases but may not always protect the animal. Any unvaccinated animal should be handled cautiously and suspected of an infectious disease. Very young or old animals with weak immune systems are most susceptible to infectious diseases.

Infectious diseases can be classified into four groups according to their zoonotic potential and **nosocomial** potential, ability to be acquired in a hospital.

Class 1 Infectious Diseases are diseases with a low infectious potential. These diseases have a very slight chance of spreading between patients or from animal to man. Routine use of disinfectants will prevent spread. Class 1 diseases include systemic herpesvirus, the neurologic (chronic) form of canine distemper, and histoplasmosis.

Class 2 Infectious Diseases are diseases with a moderate zoonotic potential that require close contact with infected body fluids or a vector to transmit them. Routine use of disinfectants will prevent spread. Class 2 diseases include bacterial infections susceptible to antibiotics, feline leukemia virus, feline immunodeficiency virus, feline infectious peritonitis, and canine ehrlichiosis.

Class 3 Infectious Diseases are diseases that require close or direct contact with infected animals or their body fluids. Stringent hand washing, disinfection of cages and equipment, and careful disposal of all wastes are essential for disease containment. Class 3 diseases include antibiotic-resistant bacterial infections, canine brucellosis, leptospirosis, giardiasis, toxoplasmosis, campylobacteriosis, and dermatophytosis.

Class 4 Infectious Diseases are diseases that are highly contagious and may be spread by direct contact or by airborne transmission. Many of these diseases pose a serious zoonotic threat and are resistant to most means of control. Class 4 diseases include canine parvo virus, feline panleukopenia, infectious canine hepatitis, systemic canine distemper (acute), canine and feline viral respiratory diseases, feline chlamydiosis, rabies, salmonellosis, shigellosis, tuberculosis, and plague.

Animals with certain Class 3 infectious diseases or any of the Class 4 infectious disease require **isolation** from healthy animals. Ideally, isolation facilities are separate quarters other than those housing healthy animals. Isolation facility precautions should be strictly followed to prevent infection of susceptible animals in the hospital or clinic environment.

Isolation Facility Precautions:

- Protective clothing such as smocks or gowns, masks, shoe covers, and rubber gloves should be worn when handling these animals.
- Hand washing with an antiseptic soap when entering and leaving isolation is required. Hands may be rinsed briefly in a safe disinfectant such as a diluted bleach solution.
- Cages and equipment must be thoroughly cleaned and disinfected.
- A footbath containing a disinfectant is often placed at the door for use upon entering and leaving isolation.
- Equipment and clothing used in isolation should not be used in the rest of the hospital or clinic. Many clinics provide disposable smocks, gloves, masks, and foot covers for use in this area.

Quarantine is the isolation of an animal or animals suspected to have been exposed to an infectious disease. Animals placed in quarantine must remain isolated for the duration of the disease's **incubation period**, the usual time between the animal's contact with the infection and the appearance of disease symptoms. A common use of quarantine is when an animal bites a human. A 10-day rabies quarantine is required during which the animal is observed for behavioral changes consistent with rabies. Usually this period of observation is closely supervised at a clinic.

Reportable Diseases

To control the spread of disease, many infectious diseases are **reportable.** Reportable means that a veterinarian is required to report the disease to state or federal regulatory agencies. These agencies are responsible for regulating activities designed to prevent, control, and eradicate these diseases. Many reportable diseases are no longer major health threats due to control methods including surveillance testing, quarantine of suspect animals, vaccination of healthy animals, and destruction of infected animals. Most reportable diseases occur primarily in food animals. Few diseases in small animal medicine require quarantine, except rabies. Listed below are the most common reportable diseases.

Anthrax
Bluetongue
Bovine Spongiform Encephalopathy
Brucellosis
E. Coli
Equine Encephalomyelitis (EEE, WEE, VEE)
Equine Infectious Anemia
Foot & Mouth Disease
Histoplasmosis

Hog Cholera
Leptospirosis
Paratuberculosis
Potomac Horse Fever
Pseudorabies
Psittacosis (Chlamydia)
Rabies
Rocky Mountain Spotted Fever
Salmonella
Scabies
Scrapie
Trichinosis
Tuberculosis
Tularemia

Test Your Knowledge: Complete the following activity sheet to test your knowledge and understanding of the materials you have studied in this lesson.

Lesson 5: Isolation Procedures

Activity Sheet

1. What is an infectious disease?

2. List the four classes of infectious diseases. Describe the method of transmission and methods used to contain each class of disease.

   a.

   b.

   c.

   d.

3. Define isolation.

4. Which classes of diseases require isolation?

5. List four precautions taken in isolation procedures.

   a. ____________________

   b. ____________________

   c. ____________________

   d. ____________________

6. Define quarantine.

   ____

   ____

7. When an animal is placed in quarantine, how long must it remain there?

   ____

   ____

Clinical/Laboratory Activities

1. Discuss isolation procedures used at the clinic with the veterinarian or veterinary technician. Implement procedures as directed.
2. Find out which infectious diseases are more common at the clinic.
3. Discuss reportable diseases with the veterinarian or veterinary technician. Find out how often a reportable disease is presented at the clinic and which diseases have been reported in the past.
4. Research your city or county regulations for animal bites.

Lesson 6:
Animal Behaviors

Objectives:

A. Identify principles that influence animal behavior.

B. Recognize common warning signs of aggression.

C. Identify procedures for safely approaching animals.

Key Terms:

- Aggressive behavior
- Instinctual behavior
- Flight or fight response
- Fear biting

Principles of Animal Behavior

When working with animals, always remember two important rules of animal behavior: animal behavior is not consistent and animal behavior is potentially dangerous. Always use care when approaching an animal that does not know you. An animal's reaction to your presence will depend on whether it feels threatened or safe. **Aggressive behavior** is hostile, injurious, or destructive behavior. Animals may become aggressive depending upon their environment, situation, and how they are handled.

Animals use their five senses (smell, sight, hearing, touch, and taste) to evaluate their environment. Like their wild counterparts, domestic animals have more developed senses than humans.

All domestic animals, except birds, have a highly developed sense of smell. Animals identify their young, certain places, and humans by smell. Smell plays an important role in identifying boundaries. Some species, such as the dog and cat, mark their territory with urine or scent from scent glands. Any animal may react defensively to smells associated with an unpleasant experience such as a visit to the veterinary clinic, car ride, etc.

Most species have excellent vision, especially in low light or at night. Animals can focus on distant objects much easier than close objects. Therefore, approach animals calmly and slowly without threatening gestures. Most herbivores, plant-eating animals, such as horses and cattle, have wide vision, which enables them to detect movement at various angles. Never approach these animals from the rear, because they may run away or kick.

Domestic animals have well-developed hearing. Much of the communication that takes place among animals is out of the human hearing range. Humans are unable to hear many high-frequency sounds that animals can hear. Sound waves are collected by the pinnae, the ear or ear flap, with the use of muscles that focus on the source of the sound. The pinnae also serves as an important indicator of behavior. A cat may twitch its ears when angry; a horse will lay its ear back when upset. Animals respond to tone of voice; a calm reassuring voice can relax and ease the fear of an upset animal.

Touch is an important element of animal interaction. Animals use touch to bond with their young and others. Touch is also important in establishing social order and acceptable behavior. How an animal is touched by humans will affect its response to handling. It is reassuring to most species to be touched with a steady, firm stroke.

Animals react instinctively to their environment. **Instinctual behavior** is an animal's inherited tendency to respond reflexively to factors in their environment. Any one of the following factors can cause even the gentlest animal to become aggressive.

1. Irritability or pain - aggressive response caused by the pain or stress of being ill or injured.
2. Maternal instinct - aggression of a mother animal trying to protect its young.
3. Predatory - natural aggression of animals that instinctively prey on other animals.
4. Territorial - aggression of the animal protecting its "home" area.
5. Fear - defensive aggression to an unpleasant expectation of danger.
6. Intersex - aggression between animals of the same sex.
7. Sexually induced - aggression induced sexually by hormones.
8. Dominance - aggression from the animal attempting to establish control.

Warning Signs of Aggressive Behavior

All animals respond to environmental stimuli by either **flight or fight**. Their response depends upon the species and circumstances. If an animal feels cornered and unable to flee, it may become aggressive and fight. Take care when approaching an animal for the first time. Any animal has the potential to become aggressive and cause bodily harm to itself, other animals, and humans.

Small Animals

Few dogs show vicious behavior. However, dog bites from aggressive dogs are a major concern. It is estimated that nearly one million dog bites occur annually in this country. Every year, deaths resulting from dog attacks are reported, especially of young children. An aggressive dog will stare intently on the subject of its aggression. It will raise its head, ears, and hackles - the hairs on its neck and back. The dog will angle its ears forward, elevate the front half of its body, curl lips to reveal front teeth, and hold its tail high. Do not approach any dog exhibiting this behavior. Dogs may also bite when frightened; this is called **fear biting.** These dogs will exhibit submissive behavior and bite only if they feel their personal space is being invaded.

An aggressive cat can be very difficult to handle. They are very adept with their claws and teeth. An agitated cat will usually flip its tail back and forth and lay its ears flat against the head. It may strike with its front feet and hiss. It is best to leave an aggressive cat alone and proceed only when it has had time to calm down.

Captive iguanas have certain behavioral characteristics that are important to be aware of while working with and handling them. Iguanas sleep when it is dark and do not like to be disturbed during periods of sleep. They close both eyes and extend their limbs back against their body when sleeping. Tongue flicking and licking is their method of smell. They explore unfamiliar things by touching them with their tongues. If the mouth of an iguana is opened and followed by a hiss, it is a sign of aggression. If an iguana is overheated, its mouth will be open and it will pant. Overheating is dangerous for iguanas; if an iguana is panting, it should be moved to a cooler area. Iguanas open their mouths wide to yawn which is considered normal behavior. Iguanas have glands in their nasal cavities that secrete a concentrated salt solution. Sneezing helps to clear the nostrils. Head bobbing is an important way for iguanas to communicate with each other and is associated with territorial dominance. Nervous iguanas twitch their tails. If an iguana is frightened or cornered, it may lash out with its tail in defense. Lying laterally with body flattened is a combative and defensive display. The dorsal crest will also rise up and the dewlaps extend giving the iguana a much larger appearance.

Large Animals

Fortunately, few horses are blatantly aggressive, although some do have nasty personalities. Any horse may become aggressive in certain circumstances. Aggressive behavior in the horse can be characterized by kicking, biting, lunging forward, and striking with the forelegs. Most horses will lay their ears back against their neck when angry or threatened. Horses are unable to see directly behind themselves. If approached from the rear, a horse will likely kick straight back with its rear legs.

Use extreme care when working with bulls. Bulls should only be worked using an appropriate means of restraint and an adequate area for containment. Cows with calves may also show aggressive behavior. Aggressive behavior in cattle is characterized by snorting, pawing the ground, or holding their head vertical to the ground. Unlike horses, cows kick to the side with their rear legs rather than straight back. How cattle react to handling will depend a great deal on breed and previous contact with humans.

Pigs are usually raised in groups where fighting is common. An aggressive sow with young pigs is one of the most dangerous animals encountered in veterinary medicine. Hungry pigs have been known to trample and eat humans. Be careful when working with adult pigs; they may become aggressive when they hear other pigs being handled or worked.

Sheep usually exhibit avoidance behavior when worked. They will flock together and move as a group. Occasionally, an aggressive ram may charge and attempt to butt.

Llamas and alpacas that are used to being handled can be docile and pleasant. On occasion, they can be aggressive or spit. When llamas are annoyed, their most common response is to spit up the contents of their stomachs at the offender, whether it be another animal or a handler. Llamas rarely strike out with their front feet. They usually only rear to avoid a situation. Llamas will "cow kick," bring a rear limb forward and outward with an arching motion. They may also kick backwards with a quick jab. On occasion, llamas have been known to bite humans. Alpacas are shy, more easily frightened, and less inquisitive than llamas. Ear and tail positioning of llamas and alpacas is an indication of behavior. The normal ear position is vertical and turned forward. In an alarmed llama, the ears will be cocked forward. Ears that are laid back against the neck show varying degrees of aggression. The normal llama and alpaca tail lies flat against the body. In the alarmed llama, the tail starts to rise. A vertical tail is a signal of intense, aggressive behavior. The higher the tail the more aggressive. Llamas and alpacas also make a snorting or clicking sound that indicates mild aggression. If frightened, they make a screaming sound, and male llamas make a screeching sound when fighting.

General Rules for Safely Approaching Animals

- Use the buddy system when working with large animals or animals with a nature that creates the potential for physical harm. If one person is threatened or injured, the other can react and remove the person from harm, or seek additional assistance.

- Never put yourself in a situation that you are not physically or mentally prepared to handle. Receive proper training and learn what is normal behavior for different species.
- Work in an area that closes securely so that an improperly restrained animal cannot escape from the facility.
- Be familiar with proper restraint techniques and keep restraint devices within reach. Restraint should be used only in such a way to protect both the animal and the handler. Handling and restraint techniques are discussed in Unit VI, Lesson 1.
- Focus on what you are doing and also pay attention to what is going on around you. Being distracted may put you in danger and can lead to slower reaction times.
- Approach any animal slowly and calmly; quick moves can startle animals and cause them to react in a defensive or aggressive manner.
- Realize that animals are intimidated by being cornered or towered over.
- Keep your eyes on the animal at all times, but avoid direct eye contact or putting your face directly in the animal's face, both of which are threatening to the animal.
- Speak softly and soothingly; loud or shrill noises can cause abrupt changes in behavior.
- Do what needs to be done as quickly and painlessly as possible.
- Realize that, in some cases, animals cannot be handled without sedation.
- Expect the unexpected.
- Ask the veterinary technician or veterinarian for help if in doubt.

Test Your Knowledge: Complete the following activity sheet to test your knowledge and understanding of the materials you have studied in this lesson.

After you have completed the activity sheets, you may take the written evaluation for this unit. A score of at least 80 percent indicates you may proceed to the next unit.

Lesson 6: Animal Behaviors

Activity Sheet

1. List three factors that influence an animal's behavior.

    1. ______________________________

    2. ______________________________

    3. ______________________________

2. List three common signs of aggression in a dog.

    1. ______________________________

    2. ______________________________

    3. ______________________________

3. List three common signs of aggression in a cat.

    1. ______________________________

    2. ______________________________

    3. ______________________________

4. List two common signs of aggression in an iguana.

    1. ______________________________

    2. ______________________________

5. List two common signs of aggression in a horse.

    1. ______________________________

    2. ______________________________

6. List two characteristics of aggressive behavior in cattle.

    1. ______________________________

    2. ______________________________

7. List two common signs of aggression in llamas and alpacas.

   1. ____

   2. ____

8. List six rules for safely approaching animals.

   1. ____

   2. ____

   3. ____

   4. ____

   5. ____

   6. ____

Clinical/Laboratory Activities

1. Discuss the types and varieties of animals treated at the clinic with the veterinarian or veterinary technician. Find out if he or she has found certain breeds to be more aggressive than others. Are any particular patients aggressive?

2. Ask the veterinarian or veterinary technician if he or she has observed a certain behavior in an animal before it exhibits an aggressive response.

3. If assisting with exotic animals, find out the aggressive behavior for the different types of pets.

Unit Checklist

Student Name ____________________ Overall Unit Rating ________

Activity Sheet: Hazardous Materials Rating ________

Comments: ____________________

Activity Sheet: Maintaining a Safe Environment Rating ________

Comments: ____________________

Activity Sheet: Cleaning, Disinfecting, and Maintaining Clinic Areas Rating ________

Comments: ____________________

Activity Sheet: Zoonotic Diseases Rating ________

Comments: ____________________

Activity Sheet: Isolation Procedures Rating ________

Comments: ____________________

Activity Sheet: Animal Behaviors Rating ________

Comments: ____________________

Written Unit Evaluation Score ________

Additional Comments: ____________________

Teacher Signature ____________________ Date ________

Student Signature ____________________ Date ________

Unit VI

Animal Care

Animal care assistants provide basic care to animals. This unit addresses proper handling and restraining techniques to use when providing care or assisting with treatments and procedures. The animal care assistant must be able to recognize and report changes in conditions of animals at the clinic. This unit discusses important observations to report to the veterinarian. You will learn basic animal care procedures, including cleaning compartments and feeding and weighing animals. You will also learn to bathe and dip animals and to recognize the toxic side effects of insecticides used in some shampoos and dips.

Unit Lessons

Handling and Restraining Animals

Observation Skills

Parasite Identification

Cleaning Animal Compartments

Feeding

Weighing

Bathing and Dipping Dogs and Cats

Lesson 1:
Handling and Restraining Animals

Objectives:

A. Identify types of small animal restraints.

B. Identify types of large animal restraints.

C. Identify potential routes of escape and take precautions.

D. Securely support the animal's body weight when lifting.

E. Determine if assistance is needed when lifting.

F. Examine restraint devices for security.

G. Assist in restraining animals as directed.

H. Follow clinic procedures for walking and exercising animals.

Key Terms:

- Restraint
- Physical restraint
- Chemical restraint
- Restraint pole
- Muzzle
- Scruff
- Cat bag
- Halter
- Nose twitches
- Tail restraint
- Lunge line
- Squeeze chute
- Nose tong
- Snares

In veterinary medicine, animal **restraint** is the process of keeping an animal in control while performing necessary procedures. Depending on the procedure, the veterinarian and staff may take additional measures to minimize an animal's discomfort and to complete the procedure quickly. **Physical restraint** involves the handler's body as well as devices designed to exert direct or indirect control over certain body parts of the animal or to divert the animal's attention. Physical restraint is used for all unpleasant procedures, including physical examinations, bathing, administering oral medications or injections, drawing blood, and taking radiographs. **Chemical restraint** is the use of drugs such as tranquilizers and anesthetic agents to produce a calmer, more approachable patient. Chemical restraint is reserved for very painful procedures and for animals with behavior that makes a procedure unsafe.

Animals are restrained for their protection as well as the handlers' protection. Most potentially dangerous situations can be avoided by using proper restraint techniques, devices, and common sense. The handler must be familiar with behavior patterns for specific species and for individual animals. The animal care assistant will not be responsible for difficult restraint techniques but will be expected to help with certain procedures.

Animals may be restrained in the presence or absence of their owners. Some owners are much more sensitive to their animal's fears and feelings than others. For both the owner's and the animal's sake, it is important that the animal not feel any more threatened than necessary by the restraint. With most animals, effective restraint can be accomplished without undue force or fear. Restraint techniques should not be forceful and should include soft, soothing murmuring to the animal and frequent use of the animal's name. Slow, non-threatening body language and a firm but gentle touch – a hug, not a death grip – will gain the animal's trust and prevent excessive resistance. Lightly scratching a dog's or cat's ears or a dog's belly when it's safe to have a free hand available will provide a pleasant distraction to the patient and take its mind off the procedure. When more forceful restraint such as scruffing a cat, muzzling a dog or cat, or twitching a horse's nose is necessary, the animal is often taken into a private area in the clinic to avoid upsetting the owner.

Make sure that you understand a restraint technique before attempting to restrain an animal. There is a right and a wrong way to restrain animals. When one method is not working, it may be better to try another approach; experience is the best teacher.

Small Animal Restraint

Before removing any animal from a cage or run always make certain that all doors and windows to the outside are closed. The most common restraint devices for small animals are the collar and leash, which allow some control of the animal and its ability to bite. A **restraint pole** is a noose-like collar at the end of a long extension pole. It is used to catch very aggressive animals without getting close enough to be bitten.

Dogs

Small dogs weighing less than 25 pounds may be lifted by placing one hand on the chest area between their front legs. Lift the dog holding it close to your body and then place it on the table.

Medium-sized dogs weighing 25-45 pounds may be lifted by placing one arm around the front of the dog and the other arm around the dog's rump. Hold the dog securely against your body because as some dogs will try to jump from your arms. When lifting a dog from this position, bend your knees and lift the dog using your legs. DO NOT bend at the waist to lift. Lifting from the waist can cause serious back injuries.

Placing large dogs on a table requires two people to lift the animal. Both people should stand on the same side of the dog and the table. One person should place their arms around the dog's forequarters and the other person should place their arms around the hindquarters. Both people should lift the dog at the same time.

Most dogs are brought into the practice on a leash or in a cage. Fortunately most dogs are friendly and will readily come to the front of the cage or run when approached. Timid or frightened dogs may avoid capture and will either submit when cornered or may try to bite. Be patient when approaching a frightened dog because you may not know until the last minute how it will react. Retrieving vicious dogs from a cage or run should be left to the veterinarian or in some cases to the owner. Whatever the personality of the dog, remember to keep the cage or run door closed as far as possible until the dog is captured.

Examinations of most dogs take place on an examination table. Very large dogs may need to be examined on the floor. For some dogs, being placed on the examination table is very stressful and causes them to bite. If there is question about whether an animal will or will not bite, be safe and use a **muzzle**, a device used to cover the mouth of an animal to prevent it from biting or eating. Commercial muzzles made of leather, nylon, or combinations are available for most dogs and cats. It is important to use the appropriate size muzzle and to tighten it sufficiently. If a commercial muzzle is not available, a roll gauze or a leash can be used to muzzle the dog. The advantage of these materials is that they readily fit any size dog.

Any dog placed on an exam table should be restrained. The amount of restraint required will depend upon the procedure being done. Control the dog at all times to prevent it from accidentally falling off the table. Serious injuries can occur if a dog is allowed to jump from a table. Always lift the dog from the table in the same manner it was placed on the table.

Dogs are routinely restrained for injections and collecting blood samples. If using the veins in the forelegs, the handler stands beside the table facing the same direction as the dog's head. The handler places one arm around the dog's neck and head and snugly holds the dog close to his or her body. The other arm is placed over the dog's back with the hand cradling the dog's elbow. The handler applies pressure with a thumb to distend the dog's vein. This technique is modified slightly if blood is to be drawn from a vein in the animal's neck. The handler again faces the same direction as the dog's head, places an arm over the dog's neck, and grasps the dog under the lower jaw to elevate its head. The other hand should grasp the dog's front legs and extend them over the table.

Laying a dog on its side may be necessary for some procedures. To restrain the dog in this position, the handler first places the dog on its side by reaching over the dog in a standing position and grabbing the front and rear legs nearest to the handler's body. The handler then lifts the dog off the table and gently places it on its side. To keep the dog in this position, the handler's elbow should rest across the dog's neck and hold down the front leg. The other hand should hold down the rear leg. Holding the dog in this manner will prevent the handler and the veterinarian from being bitten. It also will prevent injury to the dog.

Assistants may be assigned the responsibility of taking dogs outside of the clinic to empty their bladder and bowels. Even the simplest situations such as a walk can be dangerous if not handled properly. Animals may be lost or killed after accidentally escaping from handlers. Employees and pet owners may be bitten badly if restraint is inadequate. Maintaining a secure outside environment is important for exercising dogs. Hospitalized animals may be frightened of their new environment and handlers and may try to escape. Always check for potential escape routes before removing a dog from its cage or run. Collars should be snug but not tight around the dog's neck. Two fingers should fit between the dog's neck and the collar when properly fitted. Leashes should have snaps that work properly. To be safe, use two leashes when walking a dog outside the building.

Many clinics use all-in-one choke collar and leashes and remove the dog's own collar while in the clinic. Collars can catch on cage doors and choke the animal in a matter of seconds.

Choke collars are more secure than strap collars in that they will not slip off, but they can be dangerous. Choke collars must be properly fitted with the leash end coming over the top of the neck so that they will release when slack is allowed by the handler.

Cats

Most owners carry their cats to the clinic in their arms or in pet carriers. Cats may react to the stress of hospitalization in one of several ways. They may become very aggressive and try to attack. They may be so frightened that they cower in the back of the cage, or they may be friendly and come to the front of the cage. Cautiously approach any cat that displays aggressive behavior such as hissing, striking, or lunging. Never attempt to handle an aggressive cat without assistance. When removing a cat from a carrier or cage, it is important that all doors and windows to the outside are closed to avoid accidental escape.

Handlers should only use minimal restraint when handling cats. Some cats can become so stressed from being restrained that they have respiratory arrest. Remember, a cat's first defense is its claws. An aggressive cat should be placed in a carrier or box with a lid. Docile cats can be safely carried by placing one arm under the cat's body. The handler's hand is placed between the cat's front legs and the cat rests on the holder's arm. If the cat tries to bite or scratch, the handler can hold the cat by the back of the neck or **scruff** to prevent injury.

Restraining cats for physical examinations and venipuncture is similar to restraining dogs. One method that differs from dog restraint is the stretch method. The handler holds the cat by its scruff with one hand and the back legs with the other hand and stretches the cat while it's on its side.

Cats that cannot be picked up without risk of injury to the handler may be looped with an all-in-one choke lead, giving the handler control of the head while the free hand is available to scruff the cat. Care must be taken not to cut off the cat's ability to breathe.

Sometimes a thick towel is used to cover the cat for transport or handling. The cat may be bundled into a towel or palced into a **cat bag**. The cat's head remains uncovered and the rest of the body is contained in the bag to control all its weapons. Pillowcases and large fishing nets may also be used to contain very fractious cats.

Ferrets

Ferrets are long, streamlined, very active, and agile creatures that are a challenge to restrain even for the most routine procedures. Scruffing a ferret by the nape of its neck immobilizes its head and front legs effectively and has a slight hypnotic effect. It is still possible for a ferret to wiggle its torso and hind legs while being scruffed. Scruffing will almost invariably cause ferrets to yawn, which allows a good look into their mouths. With this technique, a cursory exam of the oral cavity or dosing with oral medications can be done quickly. Some veterinarians make examinations easier by rolling the whole ferret up in a towel and folding the towel back in strategic places to reveal the part of the animal to be examined. While most ferrets are agreeable, they can escape easily from their handlers. Chemical restraint is often used for thorough examinations.

Rodents

To pick up a mouse, grasp the base of the tail with the thumb and forefinger. Be sure not to pull at the tip of the tail because the skin can be torn off. If the mouse needs to be inspected closely, grasp the scruff of the neck using your thumb and forefinger. To restrain with one hand, hold the mouse by the scruff of the neck and turn it over so that its back rests in the palm of your hand and its tail is held between your palm and little finger.

Gerbils do not like to be placed on their backs. They will struggle, which may cause them to be dropped accidentally. To restrain a gerbil, grasp the base of the tail and lift. Cradle the gerbil over its back with the other hand. Another method is to place a finger on both sides of the head behind the ears and lift.

One method of picking up a hamster out of a cage is to direct it into a small can or container. Another method is to grasp the scruff of the neck using thumb and forefinger. Hamsters have an excessive amount of skin around the neck that makes them easier to scruff. The hamster can be held in the cup of one's hands. A one-handed method for restraining is to grasp the body toward the tail using the thumb and third finger, putting its head toward the palm of your hand.

To restrain a guinea pig, place one hand under the chest, body, and abdomen. Support the rear end with the other hand. Use two hands when restraining adult and pregnant guinea pigs. Be careful not to squeeze the animal too tightly and cause damage to the internal organs.

To restrain a rat, grasp behind the jawline with the thumb and forefinger. Place your hand firmly over the back and rib cage. When restraining very large rats, remember to support their hindquarters. If lifting a rat from a wire bottom cage, do not pull the animal away from the cage. The rat will grasp the wire and injure its feet. The skin of the tail may also tear off if not grasped properly. Grasp the tail only at the base.

Rabbits

When carrying a rabbit for a short distance, grasp the nape of the neck and place your other hand under the hindquarters for support. To carry a young rabbit a short distance, grasp the skin over the back. Do not allow it to kick with its back legs. If the rabbit struggles while being carried this way, it could cause damage to its spine and possibly internal bleeding. It is best to tuck the rabbit's head into the bend of your elbow and to support most of its weight on your forearm. If a rabbit is to be carried for an extended distance, put it into a carrier box with a door and handle for carrying.

Iguana

When handling iguanas, it is important to remember that they are tree climbers. They have long digits on their hind limbs with sharp claws on both the front and rear feet. These long digits and sharp claws enable them to tightly grasp branches or your arm. Touch is a major method of communication for iguanas. When an iguana is threatened, it will tighten its grip on whatever surface it is on. Iguanas do not like to be picked up from above or to be grabbed around their necks or mid-sections. Do not catch an iguana by its tail. The best way to approach an iguana is from the front. Slowly place your hand in front of the iguana and allow it to climb up on you. If the iguana is nervous and wiggly, you will need to hold on to it by placing one hand around its neck with its chest in your palm and its front legs between your fingers and your other hand under the base of the tail. To control its hind legs, place its legs between your fingers. Hard to handle iguanas can be wrapped in a towel to expose only the head and tail.

Large Animal Handling and Restraint

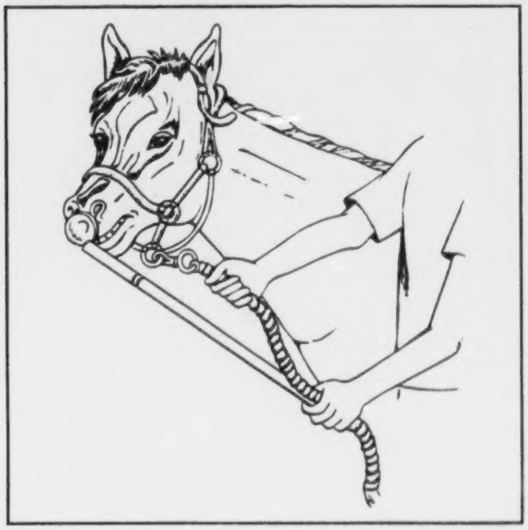
Horses

Horses can inflict fatal injuries to themselves and their handlers if improperly restrained and handled. Horses are trained to expect people to approach from the left side. Always speak to a horse when approaching so it knows where you are. When approaching a horse, extend a flat hand, palm up, and allow the horse to smell it. It is difficult for a horse to bite a flat hand. Horses can sense fear and may react by becoming nervous or aggressive. Always stand on the same side of the horse as the person working on the horse.

Horses are like cats in that excessive restraint is very threatening to them. The first step in restraining a horse is application of a **halter**. When approaching an unfamiliar horse, the handler should hide the rope or halter. Some horses will evade capture if they see these items. Always approach the horse from the left side slowly. When at the horse's neck slowly place a rope over and around the neck. Place the noseband of the halter over the horse's nose, taking care not to bump the nose with the noseband. Slide the rest of the halter over the horse's head and buckle or snap into place.

Nose twitches are probably the most common form of restraint used on horses. Figure 1.1 illustrates a nose twitch. A twitch is made of chain, rope, or metal; it is designed to be placed around the horse's top lip and tightened. This causes discomfort and distracts the horse from the procedure.

Figure 1.1 - Nose Twitch

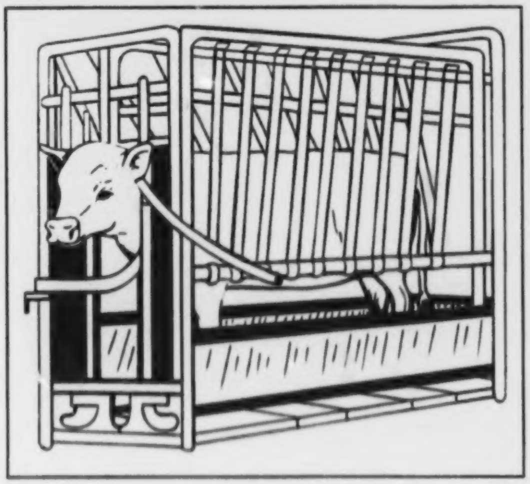


Horses require exercise using proper equipment. The halter should fit well and the lead rope or **lunge line** should have a snap that properly attaches to the halter. The lunge line is a long, flat line used to exercise the animal at a distance away from the handler. Horses should only be exercised in secure, safe areas.

Cattle

Handling and restraining cattle can be difficult because of their size. Cattle are herd animals and tend to follow the leader. The temperaments of beef and dairy cattle are different and need to be handled in different ways. Dairy cattle are handled more frequently, making them more docile and easier to handle than beef cattle that have been pastured with little human contact. When cattle are worked they are usually driven into a holding area and then run into a **squeeze chute** that immobilizes the bull or cow while it is being treated. Figure 1.2 illustrates a squeeze chute. The animal's head is held

Figure 1.2 - Squeeze Chute



in the headgate at the end of the chute. Pet or show animals can often be caught and led to the area where they are to be worked. When working with bulls, always remember that they must never be trusted. Bulls are unpredictable and can turn on you at any time.

After cattle are restrained in a chute, a **nose tong** may be used to divert their attention. This is a device placed in the nostrils to apply firm pressure on each side of the septum. A strong person may be able to hold the head and use his or her thumb and forefinger to pinch the septum. It is best to hold the nose lead and not to tie it to the chute in case the animal were to lose its footing and go down. Serious damage can be done to the nose if the tongs are tied and the animal falls. Another method of distraction is **tail restraint,** which involves standing off to the side of the animal, placing both hands close to the base of the tail, and raising the tail over the animal's back with firm pressure. Halters are also used to immobilize the head of an animal while being restrained. Halters should only be tied using knots that can be easily untied if a problem arises. The halter knot is a good knot because it is easily undone.

Swine

Pigs are very intelligent and stubborn. Boars are very dangerous and should be handled with caution. Pigs do not have good eyesight, and their instinct is to head for small openings and for light. They are hard to drive because they always want to turn and go back. When herding pigs it is best to hold a piece of plywood or solid flat board while walking behind the pigs to keep them going in the right direction. Once a pig is in a confined area, it can be caught using several different devices. Traps or chutes are used to restrain adult pigs. **Snares** can also be used as a form of restraint. A snare is a cable or rope noose that is placed around the top half of a pig's snout and pushed to the back of its mouth. Smaller pigs can be picked up by their hind legs and held firmly around the body or between the handler's legs. Another hazard of working with swine is the sound frequency level of their squeals, which can be as high as 100-110 decibels. Handlers can experience permanent hearing damage if not wearing proper ear protection.

Sheep and Goats

Sheep and goats are much easier to handle than pigs and cattle simply because of their size. Sheep tend to be timid, nervous, and easily frightened. Sheep will flock together and run away if frightened. While sheep are not as dangerous as other animals, they may bite, butt, and stomp their feet when angry. Never catch a sheep by its wool. Wool can be easily pulled out, causing blemishes to the wool and bruising of the body, both of which will decrease the value of the sheep. To restrain a sheep, approach it from behind and drive it into a corner. With one hand grab the flank and put the other hand under the jaw and pull it close to you. To hold a sheep, stand on its left side and place your left hand under the jaw and your right hand around the sheep's rump just under the tail. When oral medications are to be administered, it is best to back the sheep into a corner and straddle it while applying firm pressure against its shoulders with your knees. To set a sheep on its rump, stand on the animal's left side, twist its head up and into its right side while pushing or picking up its flank. The sheep will fall back into the handler, who will then roll it up its rump.

Goats are curious, friendly, and can be very affectionate. Bucks can be unpredictable during the breeding season. They may rear up and kick out with their front legs or butt with their heads. Be extremely careful if an animal has horns because it may use them for defense. Goats are content to be restrained with a halter or collar.

Llamas and Alpacas

The amount of restraint needed for llamas and alpacas depends on the procedure being performed and the personality of the animal. It is best to use minimal restraint when handling llamas. Most llamas and alpacas do not like to have their heads and necks touched. They will pull back their heads if approached in this manner. A proper fitting halter is very important. Llamas and alpacas normally breathe through their noses. If a halter is putting too much pressure on the lower tip of the nose it will interfere with breathing and make the animal nervous and uncomfortable. If possible, it is best to have the owners catch and halter the animal. There are several methods that can be used to catch the animal. Llamas can be trained to come to a feeding area where they can be caught. Another method is to use a 50-foot rope held between two people who approach the llama and walk it toward an area in which it can be caught. The llama must learn that it cannot force its way through the rope. Long pieces of irrigation pipe have also been used to herd animals into a smaller corral or herding area. If in a small, confined area, the outreach of your arms is enough to move them. Once the animal is caught, it can be restrained by walking into a chute.

Test Your Knowledge: Complete the following activity sheet to test your knowledge and understanding of the materials you have studied in this lesson.

Lesson 1: Handling and Restraining Animals

Activity Sheet

1. What are two types of restraint and when should they be used?

   a. ____

   ____

   b. ____

   ____

2. What is a muzzle used for?

   ____

   ____

3. What should you do first before removing an animal from its cage?

   ____

   ____

4. What is a cat's first choice of defense?

   ____

   ____

5. Why is it important not to grasp the tip of a rodent's tail to restrain it?

   ____

   ____

6. What is the most serious injury that can occur when improperly handling a rabbit?

   ____

   ____

7. From what direction should you approach an iguana?

   ____

8. Which side of a horse should you approach?

9. What are two methods of distraction for restrained cattle?

   a.

   b.

10. What is a snare?

11. What is a hazard of working with swine?

12. Why should you never catch a sheep by its wool?

13. Why is it important that a halter fit a llama properly?

Match the animals in Column A with the device or method used to restrain them in Column B. Write the appropriate letter(s) in the blank.

Column A

__________ 14. Cat

__________ 15. Ferret

__________ 16. Cattle

__________ 17. Swine

__________ 18. Horse

__________ 19. Dog

__________ 20. Goat

Column B

a. Snare
b. Halter
c. Nose twitch
d. Nose tong
e. Towel
f. Squeeze chute
g. Lunge line
h. Collar and leash
i. Restraint pole
j. Muzzle
k. Tail restraint
l. Scruffing

Clinical/Laboratory Activities

1. Discuss the clinic's procedures for handling and restraining animals with the veterinarian or veterinary technician.

2. Always learn how to properly use a restraint technique for a procedure or treatment before assisting the veterinarian or veterinary technician.

3. Identify possible routes of escape at the clinic.

4. Find opportunities to handle animals not often treated at the clinic. A pet store owner may allow you to handle birds, rodents, and exotic pets. If you do not have the opportunity to work with large animals, call a local farm or stable and ask if you can visit. A search of the Internet may inform you about a local ratite or camelid farmer.

5. If working with large animals, learn how to use rope restraints and to tie quick-release knots.

Lesson 2:
Observation Skills

Objectives:

A. Recognize and report changes in conditions.

B. Observe and report abnormal conditions.

Key Terms:

- Cyanosis
- Integumentary system
- Pulse rate

Since animals cannot talk and tell the veterinarian what is wrong with them, the veterinary team must rely on observation skills to aid in diagnosis and treatment. Animals, even more than some people, will hide their physical problems. Observation is the cornerstone of data collection.

Animal care assistants will not be asked to measure animal's temperature, pulse, or heart rate, but should report any abnormal observations they see of animals at the clinic. Because of the animal care assistant's responsibilities such as feeding, bathing, and exercising animals, he or she is in a unique position to make observations. Observation skills are developed by watching sick animals in relation to healthy animals. Animal care assistants should observe and report valuable information such as mental attitude, aggressive or passive behavior, pain, distressed breathing, and bleeding.

Hospitalized animals should be observed throughout the course of the day. Some practices have ward rounds to ensure that animals are observed. Many clinical problems are capable of causing rapid change in the animal's condition, so any change in condition should be reported to the veterinarian or the veterinary technician.

Some animals may have certain conditions that are normal for their breed or type, but may be abnormal in another. For example, it is normal for a Chinese Crested dog to be mostly bald, but this condition in a Golden Retriever would be very abnormal. Loose stools in cattle that have been on lush pasture is normal, but the same type stool in the horse would be abnormal. Table 2.1 - Normal Vital Signs for Different Species found on page 6.16 shows an interesting variety of differences among animals.

Observation of Systems

When observing any animal it is useful to use a systematic approach. Observations are made by examining specific body systems. Observe the animal from its head to its tail and report any abnormalities noted. Problems with one system may be noticed when observing another system. An example of this is **cyanosis**, a bluish discoloration of the skin and mucous membranes. Cyanosis is a result of blood not properly transporting oxygen. While this condition is observed by viewing the mucous membranes in the mouth, it denotes a serious respiratory or cardiovascular problem.

Integumentary

The **integumentary system**, or skin, is the largest system of the body. Normal skin is the body's first layer of defense. The skin and hair coat vary in quality and quantity among individuals in specific breeds, breeds within a species, age, gender, and from one area of the body to

Table 2.1 - Normal Vital Signs for Different Species

Animal	**Temperature °F**	**Pulse Rate (beats per minute)**	**Respiratory Rate (respirations per minute)**
Dog	99.5-102.5	110-120 young 60-80 large adult breed 80-120 small adult breed	15-30
Cat	100-103.1	130-140 young 100-120 adult	20-30
Ferret	100-102.5	300	33-36
Gerbil	100.6-101	360	90
Hamster	96.8	250-500	35-135
Guinea Pig	101-103	230-380	42-104
Mouse	96.4-100	325-780	60-220
Rat	99.5-100.6	250-450	70-115
Rabbit	100.4-105	130-325	40-60
Ratite	102.5-104.5 <1 month 101-103 1-6 months 100-102.5 6-12 months 99-101.5 adults	100-160 chick 60-125 juvenile 24-60 adult	8-16
Horse	99.5-102.7 foal 99-101.3 adult	80-120 <2 weeks 65-80 3-6 months 50-75 6-12 months 40-60 1-2 years 30-40 adult	14-15 foal 9-10 adult
Cattle	101.5-103.5 under 1 yr 100-102.5 over 1 year	80-120 foal, <2 weeks 65-80 3-6 months 50-75 6-12 months	15-40 young 10-30 adult
Swine	102-104 piglet 100-102 adult	100- 130 young 60-90 adult	
Sheep	101.3-104	55-115	10-30
Goat	101.3-104.5	70-80 adult	10-30
Human	98.6	50-100 adult	30-50 newborn 20-30 child 12-20 teenager 15-17 adult

another. It is important to note scratching, hair loss, change in skin color, any discharge or foul odor, skin lumps, or external parasites.

Head and Neck

The eyes should be clear and bright, with no evidence of discharge or cloudiness to the eye. The animal should not exhibit any squinting, pawing, or rubbing of the eyes. Many animals are presented to the practice for ear problems. Ear problems are characterized by shaking of the head, rubbing or scratching the external part of the ear, an odor or discharge, and in some cases a head tilt. Observing the animal during meals can reveal abnormalities associated with chewing and swallowing.

Respiratory

Respiratory rate is dependent upon environmental conditions, physiologic conditions, exercise, and stress. In some species, such as the dog, panting is a normal thermoregulatory condition. Panting in the cat is not normal and usually requires immediate medical attention. Any sneezing, coughing, and nasal discharge should be reported. Be aware of signs that an animal is in distress and report the characteristics of a distressed animal's respiratory rate such as labored, shallow, deep, rapid, or slow. Immediately report any breathing difficulties or cyanosis to the veterinary technician or veterinarian.

Cardiovascular

Heart rate is dependent upon the same criteria as the respiratory rate. The **pulse rate** is the number of beats per minute that blood rhythmically expands and contracts through arteries and is usually the same rhythm as the heart beat. Pulse is an important indication of cardiac function.

Gastrointestinal

Most animals presented with gastrointestinal problems have vomiting and/or diarrhea. The color and consistency of the vomitus and stool is an important observation to report. It is best to save a sample of the stool or vomitus to show to the veterinarian or veterinary technician before cleaning up the waste. Look for partially digested or undigested food. Animals with diarrhea should be monitored for frequency of defecation, volume and color of stool, and presence of blood or mucus. The animal's dietary intake should also be recorded. Report if the animal has eaten all of its food and whether it ate the food quickly or picked at it. It is important to monitor the animal's water intake and make sure the animal is not turning the water container over. Hospitalized patients will frequently not eat or will eat only small portions. It is very important to report any animal that is not eating well to the veterinarian or veterinary technician.

Urinary

Animals with urinary problems are presented to the veterinarian with a wide variety of signs. Many animals are presented with the complaint of straining to defecate. These animals are frequently straining to urinate. When monitoring the animal's urination, the color of the urine should be noted. Healthy urine is clear and the color of straw. There should be no blood, pus, discoloration, or foul odor. Note if the animal is conscious of urination, is straining or urinating more frequently, and if the volume of urine is small or large. These are all important observations that should be reported.

Musculoskeletal

Animals are frequently presented for musculoskeletal problems. Most of these problems are characterized by pain or lameness. A normal animal will not show any signs of limping or pain when touched or exercised. If an animal limps, it is important to discern which limb is affected. Note if the animal will place any weight on the limb and if the limping or pain is sudden or in conjunction with exercise.

Nervous

A normal animal will be responsive to its environment. The mental status of every hospitalized animal should be noted and recorded at least twice daily. Any sudden change in mental attitude and behavior or neurologic status such as the inability to walk or seizures should be reported immediately.

Test Your Knowledge: Complete the following activity sheet to test your knowledge and understanding of the materials you have studied in this lesson.

Lesson 2: Observation Skills

Activity Sheet

1. List five observations that the animal care assistant should look for when providing care to an animal.

   a. ______________________________

   b. ______________________________

   c. ______________________________

   d. ______________________________

   e. ______________________________

2. What is cyanosis?

   ____

   ____

3. What are three characteristics you should note when observing an animal's skin?

   a. ______________________________

   b. ______________________________

   c. ______________________________

4. What are three details you should note when observing an animal's food and water intake?

   a. ______________________________

   b. ______________________________

   c. ______________________________

Clinical/Laboratory Activities

1. Discuss with the veterinarian or veterinary technician any warning signs that you should look for when providing care to an animal with a diagnosed illness or injury.

2. When bathing animals, note any abnormal skin conditions or lumps and report them to the veterinarian or veterinary technician.

3. Always monitor the color, odor, and contents of feces, vomitus, or urine before cleaning up the waste. Save samples that appear abnormal to show the veterinarian or veterinary technician.

4. If asked to assist with measuring vital signs, learn the proper procedure for monitoring an animal's temperature, pulse, or respiration.

Lesson 3:
Parasite Identification

Objectives:

A. Identify common internal and external parasites.

B. Identify which parasites affect which hosts.

C. Understand how parasites are spread.

D. Recognize intestinal parasites visible in the stool.

E. Recognize evidence of external parasites on animals.

F. Follow clinic procedure if parasites are observed.

Key Terms:

- Parasite
- Host
- Host-specific
- Ectoparasites
- Infestation
- Endoparasites
- Life cycles
- Intermediate host
- Fleas
- Insecticides
- Ticks
- Lice
- Mites
- Mange
- Myiasis
- Maggots
- Fly strike
- Ascarids
- Roundworms
- Anthelmintic
- Strongyles
- Hookworms
- Whipworms
- Tapeworms
- Heartworms
- Microfilaria
- Protozoa
- Coccidia

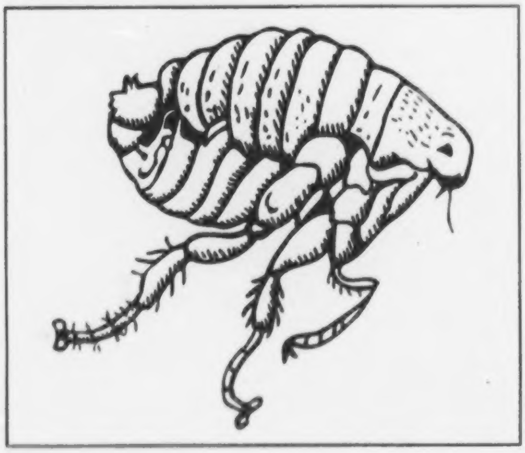
A **parasite** is a plant or animal living in or on another organism, called its **host**. The parasite depends on the host for its survival and usually causes the host some harm. Some parasites can affect several different animal species while others are **host-specific**, affecting only certain hosts. In pet animals, parasites cause illness such as anemia, diarrhea, and secondary infections and can lead to general poor health. In food animals, parasitism can cause significant economic losses. Many parasites are zoonotic parasites; that is, they can be transmitted from animals to humans.

Parasites are separated into two basic categories. **Ectoparasites** are external parasites that include fleas, ticks, lice, mites, and many biting flies. Ectoparasites live on the surface of the animal, causing superficial irritation. An **infestation** is the presence of external parasites on an individual animal. Internal parasites are called **endoparasites** and include intestinal worms, blood parasites such as heartworms, and protozoa. Parasites have defined **life cycles**, the series of events which allows them to reproduce themselves. Direct life cycles are completed by the direct exposure of the host to the eggs of the parasite. Parasites which reproduce by an indirect life cycle require involvement of an **intermediate host**, a second organism which is required by the parasite to develop to the infectious stage.

External Parasites

Fleas are the most common external parasites of dogs and cats. Fleas are tiny, black or brown insects seen crawling deep in the coat of the infested animal. They are flattened laterally (side to side) and have no wings but can jump great distances. Fleas have special mouthparts designed for piercing the skin and sucking blood. Fleas prefer dogs and cats but will bite any warm-blooded animal, including humans. Most fleas are cat fleas. Since fleas eat blood, their feces are black, coffee-ground looking material which may be seen in the animal's coat whether or not adult fleas are observed. Heavily infested animals may have severe anemia. Fleas can spread disease such as plague or serve as the intermediate host for tapeworms. While any flea infestation causes itching, unthrifty hair coats, and secondary infections, many animals are allergic to the bites and will exhibit uncontrollable itching that causes loss of large amounts of hair, especially over the lower back. Figure 3.1 illustrates a flea.

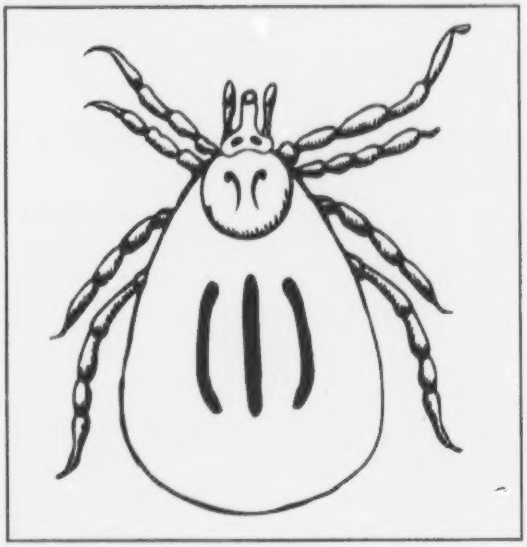
Figure 3.1 - Flea



Adult fleas spend most of their time on the animal host but drop off into the environment to lay eggs which may mature in as little as 16 days. Fleas require temperatures over 50°F and high humidity to reproduce. Two fleas can produce 5,000 more fleas in three weeks. Control measures must be aimed at killing the fleas on the animal as well as breaking the life cycle by treating the environment. Traditional flea products include **insecticides** such as sprays, powders, and dips. New technology includes growth hormone inhibitors and more convenient topical and internal products. Not all flea products are safe for both dogs and cats. Cats cannot tolerate many of the stronger products and can easily be poisoned with insecticides. As with any medication, it is critical to use insecticides according to the directions on the product label. You must also protect yourself from exposure by wearing gloves and providing adequate ventilation when applying insecticides.

Ticks are blood-sucking parasitic arachnids (eight-legged, spider-like organisms) capable of causing irritation at the site of the bite, superficial infection, and anemia. Figure 3.2 illustrates a tick. Ticks can serve as vectors for transmission of various diseases such as Lyme Disease

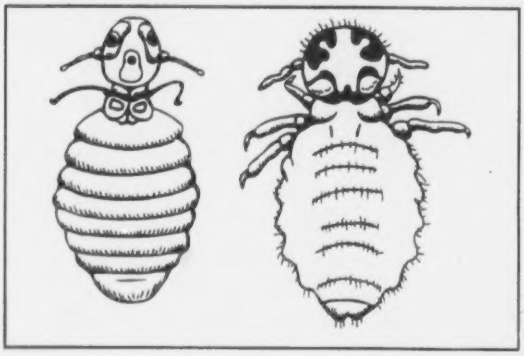
Figure 3.2 - Tick



and Rocky Mountain Spotted Fever. Ticks are divided according to their species and stage of growth into two groups, soft (seed) ticks and hard ticks. Ticks may be the size of a pinpoint to the size of a small grape. They are not host-specific but do prefer certain animals and are seen in any warm-blood animal that frequents wooded areas. Ticks are treated with many of the same insecticides used for fleas but can be more difficult to kill. Quick removal is recommended to minimize the risk of disease transmission to the animal host. The person removing the tick may also be exposed to disease from the tick's fluids. Always wear gloves when removing ticks from an animal and wash hands well afterward.

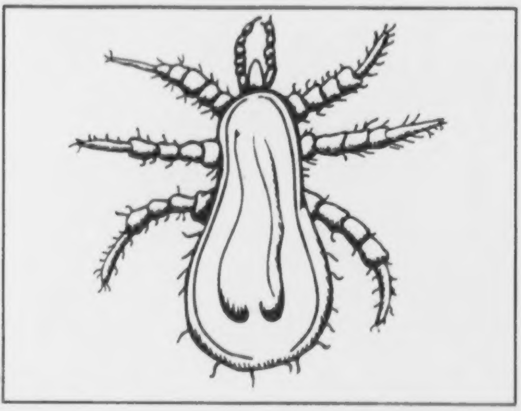
Lice (plural for louse), like fleas, are tiny, flat-bodied, wingless insects, sometimes visible to the naked eye. Figure 3.3 illustrates lice. Lice are biting or sucking insects that live their whole lives on a specific host and are transmitted by direct contact with infested animals. Because of the close confinement of food animals, especially in colder weather, lice are more common on cattle, swine, and poultry than on pet animals. However, dogs and cats can become infested with human species of lice in less than clean conditions. Both types of lice can cause skin irritation, hair and feather loss, and annoyance to their host. Large numbers of sucking lice can cause anemia. Close observation may allow you to see the adults in the animal's coat, but often the only evidence of infestation is a poor hair coat and tiny louse eggs (nits) attached to the hair shafts. Lice are treated by isolation of affected animals and treatment with insecticides in the form of shampoos, sprays, powders, dips, and "pour-ons."

Figure 3.3 - Lice



Mites are small, sometimes microscopic, spider-like arachnids. Figure 3.4 illustrates a mite. They are usually host-specific but may be transmitted to an accidental host, such as humans. Mites spend their entire lives on the host; most are contagious and transmitted by direct contact. Two general types of mites exist, surface and burrowing mites. **Mange** is the common term for an infestation of mites. The most common mange of dogs is Sarcoptic mange, which causes the classic "mangy" appearance of a thin hair coat coupled with intense itching. Sarcoptic mange can be transmitted to humans, causing a short-lived, but very uncomfortable, rash usually on the forearms and abdomen. Ear mites are a type of mange mite commonly seen in dogs, cats, rabbits, and ferrets. Cheyletiella is the "walking dandruff" mite usually seen in cats. Demodectic mange is a non-contagious mange, usually seen in dogs with poorly developed immune systems.

Figure 3.4 - Mite



Livestock in close confinement can suffer significantly from many species of mange mites. Close observation may allow you to see some species of mites, but diagnosis is usually accomplished by skin scrapings and ear swabs examined under a microscope. Treatment includes isolation of affected animals and treatment with appropriate shampoos, dips, powders, or sprays.

Flies, mosquitoes, and gnats are all external parasites that annoy the animal host by causing itching and irritation. They may also transmit disease either as true vectors, such as biting flies, or by mechanically carrying microorganisms from animal to animal. Mosquitoes can transmit heartworm disease. Diseases that can be transmitted by flies include equine infectious anemia, anaplasmosis, and pinkeye. **Myiasis** is an infestation of the skin by **maggots**, the larvae or juvenile forms of flies deposited in open wounds. Figure 3.5 illustrates a maggot. Myiasis may be seen in both livestock and small animals. Myiasis is treated by mechanically removing the larvae and treating the associated inflammation. **Fly strike** is the term used to describe the irritation of the skin caused by biting flies; fly strike is commonly seen on the tips of outdoor dogs. Prevention of fly-related problems is directed by destroying fly-breeding sites. This is accomplished by draining standing water and properly disposing of decaying bedding, manure, vegetation, and animal carcasses. Forms of insecticides include ear tags for cattle, sprays, powders, and insect repellant lotions and creams. Environmental insecticides include granules, sprays, and fly baits. Care must be taken when treating food animals to not use products that leave residues in meat and milk. Figure 3.6 illustrates a biting fly.

Figure 3.5 - Maggot

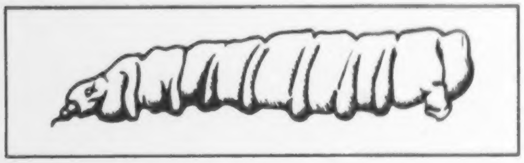
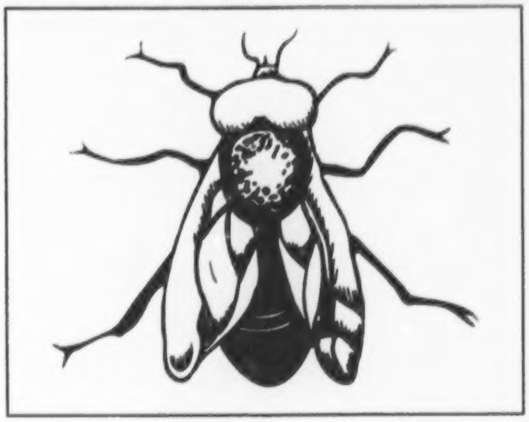


Figure 3.6 - Biting Fly



Internal Parasites

Ascarids, commonly called **roundworms** in dogs and cats, are intestinal parasites transmitted primarily by exposure to feces containing the microscopic eggs. Ascarids are generally host-specific; their life cycle depends on the species of host that they infect. Adult ascarids are long (3.5 cm or more), white, spaghetti-looking worms that inhabit the animal's intestinal tract, causing malnutrition and in severe cases, gastrointestinal blockages. They cause the most problems in immature animals and can be transferred from a mother to its offspring in the uterus before they are born. Roundworms in dogs and cats can be transmitted accidentally to humans by contact with egg-containing feces. Though adult worms can be observed in the feces or vomitus of infested animals, diagnosis is usually accomplished by microscopic examination of the feces. The life cycle is difficult to break because the eggs can survive in the environment for months to years. Management includes administration of an appropriate **anthelmintic**, or "dewormer" and picking up feces regularly in the environment. Hand washing is critical to preventing human infections.

Strongyles are parasitic roundworms of horses, cattle, sheep, and swine. They vary in length from 6-47 cm, depending on the species. Strongyles are host-specific but have similar life cycles and eggs. Infection occurs when the animal consumes the eggs or larvae by grazing on a contaminated pasture. Once ingested, the larvae migrate through internal organs and blood vessels causing damage to invaded tissues. Strongyles are prolific egg-layers and can be diagnosed by microscopic fecal examinations. Many different anthelmintics are effective against strongyles, but regular worming along with environmental management such as pasture rotation is necessary to achieve adequate control.

Hookworms are tiny (6-20 mm long), hair-like, white or reddish colored intestinal parasites of dogs and cats and are not easily visible to the naked eye. Hookworms are bloodsuckers that attach to the lining of the small intestine, causing malnutrition and digestive disturbances such as diarrhea. Often fatal, severe anemia may be seen, especially in puppies and kittens. Modes of transmission include ingestion of infective eggs or larva in the stool or transmission from mother to fetus in the uterus. Penetration of the skin by infective larva can occur in both animals and humans. Hookworm eggs can be identified by microscopic examination of the feces. Theses eggs can survive for months to years in the soil and can larvate in the soil in warm weather. Because of the zoonotic potential, extreme care must be taken in managing hookworm infestations. Administration of appropriate anthelmintics and proper disposal of feces are imperative. Children should not be allowed to go barefoot in contaminated areas; sandboxes are potential sources of exposure to infected feces. Hand washing is essential after exposure to animal feces.

Whipworms are parasites of dogs and inhabit the large intestine. Adults are white, 2-3 inches in length, slender at one end and thick at the other, giving the appearance of a whip. The adult whipworm is not easily visible in the stool, except in severe infestations. The adults feed on blood and tissue fluids in the intestine and can cause malnutrition, chronic diarrhea, and anemia. Infection occurs when an animal ingests soil or grassland contaminated with infected feces. Whipworm eggs are among the most stubborn parasite eggs in the environment; reinfection is common. Whipworm eggs can be observed by microscopic examination of feces, but because the parasite is an intermittent egg-layer, diagnosis may require multiple fecal examinations. Rigid sanitary and hygienic measures are necessary to minimize whipworm problems.

Tapeworms are intestinal parasites that vary in length depending upon the species of the worm. Most tapeworms are fairly host-specific. Tapeworms are not usually as serious as roundworms, hookworms, and whipworms, but can cause weight loss and digestive disturbances. The adult attaches itself to the intestinal lining where it receives nourishment. It forms "chains" of segments, each of which is a potential worm, actually a packet of eggs encased in a small motile segment which splits off from the adult when mature and can be seen in fresh feces or around the anus of infected animals. Fresh segments are about 1/4-1/2 inch wide, flattened, and cream-colored. When these segments dry, they look like grains of rice attached to the hair around the anus. The tapeworms of significance to veterinary medicine require an intermediate host to complete their life cycles. Fleas and rodents are the intermediate hosts for dog and cat tapeworms. Special dewormers for tapeworms are almost 100 percent effective but reinfection is likely unless proper attention is given to control of the intermediate hosts such as flea and rodent control. Humans get a different type of tapeworm from uncooked meat and fish and are rarely infected by accidental ingestion of tapeworms of other species. Tapeworms are often confused with pinworms in children.

Heartworms are internal parasites whose natural host is the dog and other canines. Ferrets and cats are infected less commonly. The heartworm is a blood parasite carried from animal to animal by the mosquito, the intermediate host. It takes approximately six months for the parasite to mature to adulthood. The adult heartworm is 12-31 cm in length, cream-colored, spaghetti-like, and resides in the chambers and blood vessels of the right side of the heart. With time, the parasite causes permanent damage to the heart and leads to congestive heart failure in untreated animals. No symptoms occur until the disease has progressed to congestive heart failure when coughing and exercise are intolerable.

Adult female heartworms produce juveniles, called **microfilariae**, that can be detected by microscopic examination of a blood sample in most cases. Antigen tests are specialized tests that detect the presence of adult heartworms, which do not always produce juveniles. It is recommended that dogs have an annual blood test for heartworm disease in order to detect an infection before it causes permanent damage. Prevention is preferred in dogs because treatment of heartworm disease requires potentially toxic drugs. No safe treatment is available for heartworm disease in cats. Heartworm preventatives are medications given to dogs, and now cats, on a daily or monthly basis. These products arrest the development of the parasite before it reaches maturity. Mosquito control is important in minimizing the spread of heartworm disease.

Protozoa are intestinal or systemic parasites which may infect the intestinal tract or other organ systems of their hosts. These microscopic organisms pose no serious health threats in small numbers, but heavy infections can cause serious disease in young or pregnant animals. Common intestinal protozoa include **coccidia**, a group of microorganisms that infect specific hosts, including dogs, cats, livestock, and poultry. Most protozoal diseases are characterized by weight loss and diarrhea. Infection occurs when animals come in contact with infected animals, their feces, or contaminated food and water. Toxoplasma and Giardia are protozoa that can be transmitted to humans by ingestion of the organism from fecal contamination, or in the case of Toxoplasmosis, by inhalation of dust from dried fecal material. Toxoplasmosis is a special risk to pregnant women who are in contact with cat feces because it can cause fetal abnormalities and abortion. Protozoal organisms can be diagnosed by microscopic examination of feces. Treatment includes specific anti-protozoal drugs and antidiarrheal medications.

The parasitic diseases discussed in this lesson are the more common diseases of animals. Many, less common parasites exist but have a lesser significance to the veterinary clinic. The animal care assistant should focus on learning to recognize the common parasites on the animal or that can be seen in feces and their preferred hosts. Good observation skills must be developed; saving a suspicious specimen and reporting your observations to the veterinarian or veterinary technician is important to providing good patient care. It is especially important to know which parasites have zoonotic potential to pose a risk to humans and to observe personal hygiene measures to protect yourself from exposure. Further discussion of diagnosis and treatment of parasitic diseases will be presented in Unit VIII, Lesson 1.

Test Your Knowledge: Complete the following activity sheet to test your knowledge and understanding of the materials you have studied in this lesson.

Lesson 3: Parasite Identification

Activity Sheet

1. Define parasite.

2. Explain the difference between ectoparasite and endoparasite.

3. List four external parasites.

   a. ____________________

   b. ____________________

   c. ____________________

   d. ____________________

4. List four internal parasites.

   a. ____________________

   b. ____________________

   c. ____________________

   d. ____________________

5. What is the most common external parasite on small animals?

Match the parasite in Column A to its description in Column B by placing the appropriate letter in the blank in front of the appropriate parasite.

Column A

______6. Ticks

______7. Mites

______8. Fleas

______9. Lice

______10. Ascarids

______11. Hookworms

______12. Whipworms

______13. Tapeworms

Column B

a. Small, sometimes microscopic, spider-like arachnids, that can be on the surface or burrowing. Cause an animal's coat to look "mangy" and itchy skin.

b. Intestinal parasites of dogs and cats that are tiny (6-20 mm long), hairlike, white to reddish colored parasites.

c. Intestinal parasites of dogs and cats that are long (3.5 cm or more), white, spaghetti-looking worms.

d. Tiny, black or brown insects that may be seen crawling deep in the dog's or cat's coat. Their feces are black, coffee-ground looking material that may be seen in the animal's coat.

e. Intestinal parasite of the dog that is white, 2-3 inches in length, slender at one end and thick at the other and causes diarrhea with blood or mucous.

f. Eight-legged, spider-like organisms that can be the size of a pinpoint to the size of a small grape that embed themselves in the skin of dogs and cats, causing anemia and potentially transmitting disease such as Rocky Mountain Spotted Fever.

g. Tiny, flat-bodied, wingless insects sometimes visible that leave tiny nits attached to the hair shafts causing general unthriftiness, itchung, and poor hair coat in many species.

h. Segments of encased eggs that can be seen in fresh feces or around the anus of an infected dog or cat. The segments look like grains of rice when dry.

Clinical/Laboratory Activities

1. Discuss with the veterinarian or veterinary technician the common parasites seen at the clinic where you are working. To assist with your ability to identify different parasites, ask to see examples when they are found at the clinic.
2. Find out the clinic's procedure for reporting parasites.
3. Examine animals that you are bathing, handling, or restraining for external parasites.

Lesson 4: Cleaning Animal Compartments

Objectives:

A. Clean and disinfect dog and cat cages or runs.

B. Clean and disinfect bird cages.

C. Clean and disinfect rodent and rabbit cages.

D. Clean and disinfect equine and food animal stalls.

E. Clean and disinfect feed and water containers.

As stated earlier, disinfection is the process of destroying harmful organisms. Many stressed or ill animals are not able to control urination or defecation, so animal cages and holding areas may require cleaning and disinfection several times a day. Most disinfectants do not work well in the presence of organic matter. Therefore, disinfectants should not be used on dirt floors or the ground. All organic matter such as feces, straw, shavings, and urine must be removed before disinfecting surfaces. Disinfected surfaces must be dry before allowing animal contact. Use ONLY disinfectants approved for use with animals. Each clinic will have its own procedure for cleaning animal compartments and feed and water bowls.

Cleaning Dog and Cat Cages or Runs

Most practices are equipped with either stainless steel or fiberglass cages and concrete runs for housing small animals, such as dogs and cats. Stainless steel cages can be cold for the animal if some type of bedding is not used. Most practices use newspaper, towels, or blankets for bedding. Many different types of cat litter are available. The most common is clay litter. Corn cob, newspaper, packing peanuts, and scoopable, fine-grained litters are also available.

Procedure for Cleaning Dog and Cat Cages or Runs:

1. Wash hands and wear gloves as indicated on cleaning products.
2. Remove the animal from cage or run and place in a clean cage or holding area. Make sure cage card is also moved with the animal.
3. Remove all organic matter, bedding, litter pans, water and food bowls from the cage or run. If bedding is soiled with feces or other solids, discard the bedding in an appropriate container. Reusable bedding should be washed. Discard uneaten food, water, and cat litter.
4. Apply approved disinfectant solution to entire cage or run surface including the front of the cage. Thoroughly scrub all surfaces to remove any debris.
5. Wipe all cage surfaces to remove any remaining debris. Remove any debris, hair, dirt, etc., from floor grates in runs. Removal of all hair is critical.

6. Sponge or spray the surface again with the disinfectant. Leave the surface moist for the amount of time recommended by the directions for the disinfectant.

7. After the disinfectant has dried, place clean bedding and/or a cat litter pan filled with clean litter into the cage, or run before replacing the animal.

8. Replace the animal in the cage or run and secure door tightly.

9. Wash hands after handling each animal. As mentioned in Unit V, Lesson 3, many zoonotic diseases are transmitted to humans by contact with animal feces. Hand washing is very important after cleaning animal compartments to prevent disease transmission.

Cleaning and Disinfecting Bird Cages

Most birds presented to the veterinary practice are brought in their own cages. If hospitalization is necessary, birds remain in their own cages. Hospitalized birds should be placed in warm, quiet, draft-free areas. Covers are placed on cages at night. Use care when working around or with birds because they are easily stressed by sudden movements and noises.

Procedure for Cleaning and Disinfecting Bird Cages

1. Wash hands and wear gloves as indicated on cleaning products.

2. Remove food and water containers without stressing the bird.

3. Discard uneaten food and water.

4. Clean and rinse containers.

5. Dry containers and replace with appropriate food and water.

6. Remove bottom tray and discard the cage liner.

7. If soiled, clean and disinfect the tray.

8. Dry the tray and replace with a clean cage liner.

9. Wash hands.

Cleaning and Disinfecting Rabbit and Rodent Cages

Most rabbits are brought to the veterinary clinic in their own cages or carriers. Often rabbits are treated at the clinic and discharged; few require hospitalization. The following procedure for cleaning rodent and rabbit compartments would be used mainly by people working with research animals.

Procedure for Cleaning and Disinfecting Rodent and Rabbit Cages:

1. Wash hands and wear gloves as indicated on cleaning products.

2. Carefully remove the animal from cage and place in a clean cage. Move cage identification to the new compartment with the animal.

3. Remove all organic matter such as bedding, shavings, feeders, and waterers from the cage.

4. Apply an approved disinfectant solution to the entire cage and thoroughly scrub all surfaces to remove any debris. The urine from

rabbits and some rodents contains crystals that form a hard scale which can be difficult to remove.

5. Wipe all cage surfaces to remove any remaining debris.
6. Thoroughly rinse, disinfectant, and allow the cage to air dry.
7. Place clean bedding in the cage before replacing the animal.
8. Place fresh water and food in clean containers.
9. Put the animal in the cage and secure door or lid tightly.
10. Wash hands.

Cleaning and Disinfecting Equine and Food Animal Stalls

Large animal medicine uses many different types of holding areas and stalls. It is difficult to disinfect equine and large animal stalls daily. Usually these areas are cleaned daily and disinfected when the animal is dismissed from the clinic. Removing an animal from a stall will depend upon the animal and other available facilities. If the animal remains in the stall, use care to avoid injury to yourself and the animal.

Procedure for Cleaning and Disinfecting Equine and Food Animal Stalls:

1. Wash hands and wear gloves as indicated on cleaning products.
2. Remove wet or stained bedding, fecal material, and soiled food. Place discarded bedding and food in the designated area. Place fresh bedding in the stall.
3. Empty and rinse water buckets to remove any grain or hay particles. Refill water buckets.
4. When the animal is discharged, remove all bedding, food, and water. The stall and buckets for water and feed must be cleaned and disinfected with an approved disinfectant.
5. Wash hands.

Cleaning and Disinfecting Feed and Water Containers

Some practices are equipped with an automatic dishwasher for washing feed, water, and litter pans. When loading the dishwasher, wash feed and water pans in a different cleaning cycle than litter pans. Cat litter pans should be cleaned in the same manner after food and water containers have been cleaned.

Procedure for Washing Feed and Water Containers:

1. Rinse containers with water to remove any remaining food or debris.
2. Scrub containers inside and out to remove all debris.
3. Rinse containers.
4. Place containers in an approved disinfectant solution and soak for appropriate time.
5. Rinse with water. Some situations may require rinsing with a diluted bleach solution before the final rinse.
6. Allow to air dry.
7. Wash hands.

Test Your Knowledge: Complete the following activity sheet to test your knowledge and understanding of the materials you have studied in this lesson.

Lesson 4: Cleaning Animal Compartments

Activity Sheet

1. Why is it important to remove all organic matter before disinfection?

2. Why is it important to wash your hands after cleaning an animal compartment?

3. List the steps of procedure for cleaning and disinfecting dog and cat cages and runs.

   a.

   b.

   c.

   d.

   e.

   f.

   g.

   h.

   i.

4. List the steps of procedure for cleaning and disinfecting bird cages.

   a.

   b.

   c.

   d.

   e.

f. ____

g. ____

h. ____

i. ____

5. List the steps of procedure for cleaning and disinfecting rabbit and rodent cages.

a. ____

b. ____

c. ____

d. ____

e. ____

f. ____

g. ____

h. ____

i. ____

j. ____

6. List the five steps of procedure for cleaning and disinfecting equine or large animal stalls.

a. ____

b. ____

c. ____

d. ____

e. ____

7. When are equine or food animal stalls disinfected?

____

8. List the steps of procedure for cleaning and disinfecting food and water containers.

a. ______________________________

b. ______________________________

c. ______________________________

d. ______________________________

e. ______________________________

f. ______________________________

g. ______________________________

Clinical/Laboratory Activities

1. Read and follow the directions and warnings on disinfectant labels before using.
2. Clean and disinfect animal compartments as directed by the veterinarian or veterinary technician.
3. Clean and disinfect water and food containers as directed by the veterinarian or veterinary technician.

Lesson 5: Feeding

Objectives:

A. Identify different types of diets.

B. Identify the importance of following a diet order.

C. Recognize and follow NPO orders.

D. Record dietary intake and observe appetite.

E. Measure and deliver food as directed.

F. Monitor and replenish water supply as directed using the appropriate container.

G. Store food properly.

Key Terms:

- Nutrition
- Malnutrition
- Starvation
- Dehydration
- Digestion
- Diet
- Carnivores
- Herbivores
- Omnivores
- Monogastric
- Ruminant
- Maintenance requirements
- Therapeutic diets
- Ad lib
- NPO
- Colic

Nutrition

The purpose of food intake is to provide the animal with an appropriate source of protein, carbohydrates, fiber, fat, vitamins, minerals, and water. **Nutrition** is the process of providing the animal with the proper combination of foodstuffs to allow the animal to live, grow, and reproduce. Poor nutrition can predispose animals to disease and parasitism. **Malnutrition** is poor nutrition that results from feeding an insufficient amount, feeding a poorly balanced diet, or defective digestion or utilization of food. **Starvation** is extreme malnutrition and can result in death from prolonged lack of adequate nutrition. **Dehydration** is a relative lack of fluid or water in the body's tissues either from a lack of water intake or disease processes that cause the body to lose water excessively, such as fever, vomiting, and diarrhea. **Digestion** is the bodily process by which an animal breaks down the food it eats into basic substances that the body can use. Adequate digestion occurs through the action of bacteria, digestive enzymes or chemicals that act on specific food components, and muscular action in the stomach and intestinal tract.

Diet often refers to weight loss but is actually the natural food and water requirements of an animal. Different animals have different types of digestive systems and thus different dietary requirements. Most pet and livestock feed companies use quality ingredients in their foods, but as a general rule, the more expensive the food, the better the quality of the food. Good quality foods are easy to digest and contain the appropriate ingredients for an animal's digestive system. Providing good quality nutrition to an animal means making available the appropriate diet in adequate amounts and frequency that the animal needs. Water is a dietary requirement for every living organism.

Types of Digestive Systems

Different animals have different nutritional requirements and eating habits. Animals may be **carnivores** (meat eaters), **herbivores** (plant eaters), or **omnivores** (meat and plant eaters). Another way of categorizing animals is by their digestive tracts. **Monogastric** animals have a "simple," one-compartment stomach to digest food. Monogastric animals include humans, pigs, dogs, cats, and small rodents. A **ruminant** has a stomach which is compartmentalized into four sections. Ruminants include any of the hoofed, even-toed, usually horned mammals such as cattle, sheep, goats, deer, llamas, and alpacas. Horses have a simple stomach but a highly developed intestinal tract. Both ruminants and horses have high dietary fiber requirements, which they acquire from hay or grass.

Small Animal Foods

Foods available commercially for dogs and cats come in three basic forms: moist (canned), semi-moist (soft but not wet), and dry (kibbles). Dry foods are the most energy dense because they contain a higher amount of calories. A smaller amount of dry food delivers more nutritional value than moist food. Canned or moist foods are two-thirds water requiring more food to obtain adequate nutrition. Dogs and cats develop diarrhea often from canned foods possibly from the water and fat content of these meat-based foods. Birds, pocket pets, rodents, and reptiles have special dietary needs. Commercial diets balanced for their needs are available. These animals may need supplements of fresh, washed vegetables at the veterinarian's recommendation.

Food Animal Feeds

The goal of feeding livestock intended for human consumption is to produce maximum weight gain, or lactation for dairy animals, per dollar cost of unit of feed. It is also important that the end result of feeding these animals is safe, healthful meat, eggs, and animal byproducts.

Because swine are monogastric animals, they are fed concentrated food sources, primarily grains such as corn, oats, wheat, rice, millet, and sorghum. Grains contain 40-60 percent more energy, in the form of calories, than other roughage, such as grass and hay. Premixed grain diets are available for pigs that are formulated for feed efficiency or reproduction and lactation.

Cattle, sheep, goats, and exotic ruminants such as llamas and alpacas are fed a diet that is primarily roughage in the form of high fiber foods such as grass, hay, and silage, which is chopped cornstalks fermented in a silo. Because of their specialized stomachs, ruminants can digest 60-70 percent of the fiber in roughage and synthesize proteins from fiber and non-protein nitrogen sources. The two basic types of hay are grass hay, including fescue, orchard grass, and timothy, and legume hay, including clover, alfalfa, and lespedeza. Legume hays have a higher protein content and are preferred for growing and lactating animals. Hays should be inspected before being fed to animals. Moldy or dusty hay and hay contaminated with insects should be discarded. Ruminants being fattened are often given supplements of high-energy grains.

Horse Feeds

Horses have relatively sensitive digestive systems and must be fed very clean, high-quality pasture or hay. Though horses require roughage like ruminants, their nutritional requirements more nearly parallel those of swine than cattle. Horses cannot break down fiber nearly as efficiently as ruminants and require more digestible fiber sources than ruminants. Horses do not synthesize much protein from non-protein sources. Most horse owners prefer alfalfa or timothy hays because of their higher protein contents and more digestible fiber sources. Dusty hays can cause respiratory infections in horses and should be avoided. Working horses that expend large amounts of energy in exercise are often given a supplement of high-energy grains. Overfeeding a horse with grains can cause a severe belly-ache called colic and laminitis, an inflammation of the bones of the feet.

Types of Diets

Life Stages Diets

All animals have basic nutritional requirements for certain stages of their lives. For example, it takes better nutrition to grow and reproduce than it does to maintain weight. **Maintenance requirements** are the minimum that a diet should meet to allow the animal to maintain its body weight and condition in a certain stage of life. Maintenance diet also describes diets appropriate for adult, non-food animals. Diets good for efficient growth are formulated for young pet animals and also food animals in which growing is an economic issue. Athletic or performance animals such as working horses and dogs benefit from high calorie and high protein diets. Older animals have different dietary requirements as their systems age. Common terms for life-stage diets are growth, maintenance (adult), performance, and senior or geriatric diets.

Therapeutic Diets

Many disease processes are directly related to excesses or deficiencies of certain dietary ingredients. A common example in small animal practice is the relationship of dietary minerals to the incidence of bladder problems in cats and dogs. **Therapeutic diets** are diets formulated specifically for treatment or prevention of specific problems related to the animal's diet. The premium or highest quality lines of pet foods offer special therapeutic diets for those problems seen commonly in practice. These include formulas for sensitive digestive systems and food allergies, kidney disease, and heart disease. These foods are also called "prescription" diets and are recommended only by the veterinarian. For therapeutic diets to be effective, it is important that no other dietary supplements be given to the animal.

Special Feeding Orders

Prepared animal feeds vary in their composition in both ingredients and the number of calories per cup or pound of feed. Most feeds have guidelines on the bag or box for the approximate amount of food an animal of a certain size will require over the course of a day. In simple situations, these recommendations along with free access to water will afford adequate nutrition. Free access, free choice, or **ad lib** means that food or water is available at all times. The only variable considered for healthy animals is the number of meals per day in which the daily requirements are divided. This is often simply a reflection of the animal's style of eating or the owner's preference.

In some situations, special instructions tailored to the animal's special needs are given by the veterinarian. A common feeding order is **NPO** which means nothing "per os" or nothing by mouth. NPO means no food or water. This is most commonly seen for animals scheduled for a surgical procedure so that their stomachs are empty to minimize the risk of vomiting under anesthesia. An NPO order may be issued when an animal has already had a vomiting or diarrhea problem and the veterinarian wishes to allow its system time to rest before reintroducing food and water. Some diagnostic tests involving blood or radiographs (x-rays) require that the animal be fasted for a specific length of time. Animals with sensitive digestive tracts often require multiple feedings of small meals to minimize upset stomachs. Diabetic animals must be fed on a set schedule related to their insulin injections. The animal care assistant should pay special attention to feeding orders and if a question arises, check with the veterinarian or veterinary technician before feeding an animal.

Observe Appetite and Record Dietary Intake

Recording food and water intake of hospitalized animals is important. This may involve writing on an animal's progress notes or on a feeding sheet. Often animals will eat or drink very little while hospitalized. Recording an animal's dietary intake and weight daily will alert the veterinarian to potential problems.

Measure and Deliver Food and Water

The specific type of food and the amount to be fed will be determined by the veterinarian or veterinary technician in charge. It is important to feed exactly the amount specified; too much or too little can cause critical problems in some animals. Overfeeding small animals often results in diarrhea. Overfeeding of horses can cause life-threatening bloat or **colic**. When asked to do so, carefully measure food and water to accurately chart an animal's food intake. Treats should not be fed indiscriminately and should only be given with permission from the veterinarian or veterinary technician. Any abrupt change in diet can cause digestive upsets.

Healthy animals will generally drink enough water for their needs if it is readily available. Care must be taken to provide fresh water daily in containers that have been properly sanitized and rinsed. If not given another option, animals will often drink water that is tainted with chemicals or bacteria. Report any suspected contamination of a water source with fertilizers or insecticides immediately. Extreme heat and cold can increase an animal's water requirements, as can stress and disease. In freezing weather, water sources must be freshened several times a day to be sure the water is accessible. In certain confinement situations, such as cages and kennels, special watering devices are used. These devices may not always work perfectly. Check the delivery system to be sure it is functioning properly. Report any malfunction immediately to the veterinarian or veterinary technician. Death can occur much more quickly from dehydration than from starvation.

Food Storage

Careful attention to proper food handling and storage will retain food quality and minimize feeding costs. Improperly stored food can become stale and less flavorful and nutritious or moldy, sour, and dangerous to the animal. Animal feeds, like human food, should be stored in a container that protects the food from excessive moisture, contamination from foreign material, and insects or rodents. Moist or semi-moist foods must be refrigerated after opening; dry foods suffer from exposure to high temperatures and moisture in the air called humidity. Always inspect foodstuffs before feeding; do not feed foods that look moldy or smell bad. Report bad food to the veterinarian or veterinary technician and discard the food as instructed. Bad foods suspected of causing food poisoning are often submitted for laboratory analysis. Fresh food should be offered daily. Food left in an animal's dish is as much a risk of becoming contaminated and spoiled as food in a poor container.

Use the following standards to store all food:

1. Store food separate from equipment, supplies, and chemicals.

2. Stamp containers with the date the food arrived. Follow the "First In, First Out" rule to avoid old or spoiled food. Rotate older food to the front and newer food to the back.

3. All food should be placed on pallets or shelves. Never stack food directly on the floor. Food stored on the floor prevents easy cleaning of the floor and storage area and is more difficult to inspect.

4. Store opened food in a clean, covered container. Never use a container that has already been used for toxic substances or chemicals.

5. Mark all food containers to identify the contents.

6. Protect food from temperature and humidity extremes. Protection from water is also important.

7. Seal the food storage area to prevent infestations of insects or rodents. Keep doors to the storage area closed and protect access to food.

8. Never feed food contaminated by insects or rodents. Remove and destroy any damaged or contaminated food.

9. The food storage area should be well-ventilated, easily cleaned, and well-lighted.

10. Refrigerate perishable food already opened in covered, dated containers. Discard leftover food after 24 hours if not consumed.

11. Inspect all food for odors, discoloration, or unusual appearance before feeding. Destroy any product that seems abnormal.

Test Your Knowledge: Complete the following activity sheet to test your knowledge and understanding of the materials you have studied in this lesson.

Lesson 5: Feeding

Activity Sheet

1. List the three types of diets discussed in this lesson.

   a. ______________________________

   b. ______________________________

   c. ______________________________

2. Following a feeding order is important. List two reasons why it is important.

   a. ______________________________

   ____

   b. ______________________________

   ____

3. What does NPO mean?

   ____

4. Why may an NPO order be given to an animal?

   ____

   ____

   ____

5. What does ad lib mean?

   ____

6. List three forms of commercially available dog and cat foods. Circle the letter of the food form that is the most energy dense.

   a. ______________________________

   b. ______________________________

   c. ______________________________

7. Describe the food eaten by the following large animals.

   Horses:

   Cattle:

   Swine:

8. What two conditions may result from overfeeding grains to a horse?

   a. ____

   b. ____

9. List eight standards for food storage.

   a. ____

   ____

   b. ____

   ____

   c. ____

   ____

   d. ____

   ____

   e. ____

   ____

   f. ____

   ____

   g. ____

   ____

   h. ____

   ____

Match the terms in Column A to the appropriate definitions in Column B. Write the correct letter in the blank.

Column A

_____ 10. Starvation
_____ 11. Omnivores
_____ 12. Malnutrition
_____ 13. Diet
_____ 14. Herbivores
_____ 15. Dehydration
_____ 16. Therapeutic diet
_____ 17. Monogastric
_____ 18. Maintenance requirements
_____ 19. Carnivore
_____ 20. Ruminant
_____ 21. Digestion
_____ 22. Nutrition

Column B

a. The minimum requirements that a diet should meet to allow the animal to maintain its body weight and condition in a certain stage of life.

b. Diets formulated specifically for treatment or prevention of specific problems related to the animal's diet.

c. Animals with a simple, one-compartment stomach.

d. Plant eaters.

e. The process of providing the animal with the proper combination of foodstuffs to allow the animal to live, grow, and reproduce.

f. Meat eaters.

g. Hoofed mammals with compartmentalized stomachs.

h. Prolonged lack of adequate nutrition that can cause death.

i. A relative lack of fluid or water in the body's tissues either from a lack of water intake or disease processes that cause the body to lose water excessively, such as fever, vomiting, and diarrhea.

j. The bodily process by which an animal breaks down the food it eats into basic substances that the body can use.

k. Plant and meat eaters.

l. Poor nutrition that results from feeding an insufficient amount, feeding a poorly balanced diet, or defective digestion or utilization of food.

m. The natural food and water requirements of an animal.

Clinical/Laboratory Activities

1. Discuss the method of measuring and delivering food to animals at the clinic with the veterinarian or veterinary technician. Feed animals following the directions given by the veterinarian or veterinary technician.

2. Always monitor and maintain a fresh water supply for animals staying at the clinic.

3. Discuss recording dietary intake with the veterinarian or veterinary technician. Following the clinic's procedure, record animals' dietary intake. Observe appetites for the animals that you feed.

4. Store and maintain food according to the clinic's storage guidelines.

5. Discuss codes for expiration dates on cans of dogs and cat food with the veterinarian or veterinary technician.

6. Ask to see examples of spoiled food before it is thrown out.

Lesson 6:
Weighing

Objectives:

A. Identify weighing techniques.

B. Weigh animals on a platform scale.

C. Weigh animals on a balance scale.

D. Weigh animals on an infant scale.

E. Weigh large animals using a weight measurement tape.

F. Weigh animals on a portable scale.

Key Terms:

- Platform scale
- Infant scale
- Balance scale
- Weight measurement tape
- Portable scale

Recording an animal's weight should be done routinely as part of the physical examination. Many animals are presented to the veterinarian for weight loss or gain. Previously documented weight is an important piece of information as to the seriousness of the problem. Hospitalized animals are routinely weighed to monitor fluid therapy and dietary intake. Animal weight is measured in either kilograms or pounds. Always be consistent with the method used; do not weigh in kilograms one time and in pounds the next.

Weighing Techniques

Small animal practices usually use a **platform scale**, an **infant scale**, and bathroom or **balance scale**. Large animals can be weighed using a platform scale, **weight measurement tape**, or **portable scale**.

Weigh Animals on a Platform Scale

There are several different types of platform scales. The method of weighing is basically the same, despite the type of platform scale used.

Procedure for Weighing an Animal on a Platform Scale:

1. Turn on scale.

2. Wait for it to calibrate.

3. Switch to either pounds or kilograms.

4. Place the animal on the scale.

5. Read and record weight. Always write kilograms (kg.) or pounds (lbs.) after the weight.

6. Clean and disinfect the platform surface after use if the animal soils it.

Weigh Animals on an Infant Scale

Getting accurate results can be difficult when using a platform scale to weigh cats, small dogs, and puppies. Therefore, many practices also use an infant scale. Infant scales are accurate, easy to use, and easy to read. Most infant scales are smaller versions of platform scales and instructions for their use are the same. When weighing a frightened or aggressive cat, weigh the cat while it's still in the carrier. Then weigh the carrier without the cat and subtract the weight of the carrier from the total weight. The difference is the cat's weight. If using pounds and ounces in this situation, remember a pound is 16 ounces, not 10.

Weigh Animals on a Bathroom or Balance Scale

Most human doctors' offices use balance scales for weighing patients. Some veterinary practices use bathroom or balance scales to weigh small animals. They are not as accurate as platform scales and are not easy to use when weighing a large or unruly animal.

Procedure for Weighing an Animal on a Bathroom or Balance Scale:

1. Pick up the animal and hold it securely.
2. Step onto the scale and have someone read the weight.
3. Place the animal back in its cage and weigh yourself.
4. Subtract your weight from the total weight. The difference is the animal's weight.
5. Record weight in the record.

Weigh Large Animals Using a Weight Measurement Tape

Scales are not always available for weighing large animals. Weight measurement tapes provide a means of accurately estimating the weight of large animals. Measurement tapes marked in pounds have been developed for several different species.

Procedure for Weighing an Animal with a Weight Measurement Tape

1. The animal needs to be standing square with weight distributed equally on all four legs and head upright.
2. Wrap the tape around the animal's heart girth, just behind the front legs.
3. Pull snug enough to lay the hair flat, but not tight.
4. Read and record the weight. Although the weight is an estimate, it is usually accurate.

Weigh Animals Using a Portable Scale

A portable scale works like the platform scale. It is a large scale on wheels that can be pulled from farm to farm. These scales are used to weigh cattle, sheep, and swine. Usually, the animal runs through a chute and stops on the scale, which reports the weight to be recorded.

Test Your Knowledge: Complete the following activity sheet to test your knowledge and understanding of the materials you have studied in this lesson.

Lesson 6: Weighing

Activity Sheet

1. Why is it important to routinely weigh animals?

____

____

2. List four types of scales and an appropriate animal that is weighed on each type.

   a. ____

   b. ____

   c. ____

   d. ____

3. List the steps of procedure for weighing an animal on a platform scale.

   a. ____

   b. ____

   c. ____

   d. ____

   e. ____

   f. ____

4. Describe the process for weighing an animal on a bathroom or balance scale.

____

____

____

____

5. How many ounces are in a pound?

____

6. If you need to weigh a horse and no scale is available, what device would you use?

Clinical/Laboratory Activities

1. Find out whether standard or metric measurements are used to record the weight of patients at the clinic.

2. Learn how to use the clinic's scales. Weigh animals using the different techniques discussed in this lesson.

3. If assisting with large animals being weighed on a portable platform scale, ask to compare measurements of one or two animals to a weight tape measurement of the same animals.

Lesson 7:
Bathing and Dipping Dogs and Cats

Objectives:

A. Prepare cats and dogs for bathing and dipping.

B. Bathe animal using a prescribed shampoo or medication.

C. Follow safety precautions when using dips.

D. Dip animal as directed.

E. Identify and carry out appropriate drying techniques.

F. Clean and sanitize the tub.

G. Remove hair or debris from the bathtub drain.

H. Recognize side effects of insecticide reaction.

Key Terms:

- Dip
- Pour-on
- Insecticides
- Hyperthermia
- Cage dryer
- Pyrethrins
- Carbamates
- Organophosphates
- Chlorinated hydrocarbons

Bathing and Dipping Animals

Small animals such as dogs, cats, and ferrets are routinely bathed to remove dirt, debris, organic matter, and odors from their coats. Special shampoos are available for animals, because human shampoos are too harsh and will strip the natural oils from the animal's skin and coat causing dry, irritated skin. Dogs bathed more than once a month should be given a moisturizing bath or rinse to avoid this problem. Most cats dislike baths and usually only require bathing for external parasite control or certain skin conditions. Ferrets have a strong odor and may be bathed weekly with the proper deodorizing shampoo for their species. Larger animals such as cattle are usually only bathed if they are to be entered in a purebred show competition. Horses are bathed to remove heavy dirt and sweat after being worked or when being entered in a horse show.

Many shampoos are available for animals, including general grooming products for cleansing only, medicated shampoos for specific skin conditions, and flea and tick shampoos. Though non-detergent shampoos do exist, most shampoo is a detergent that exerts its effect by contact with the skin and coat and is intended to be rinsed off after application. Shampoos have little effect after being rinsed. Generally, shampoos are labeled for certain species and certain purposes. Cats are especially sensitive to chemicals. Always follow the directions on the container label before using any product.

A **dip** is a solution that is diluted with water before being applied to an animal's skin and coat. Most dips are insecticides, chemical products intended to kill external parasites. Some dips are medicines that are applied to treat certain skin conditions. Dogs and cats may be dipped in a large container of prepared solution or the solution may be poured or sponged over the animal until it is thoroughly wet. Dipping large animals is impractical. A **pour-on** is a concentrated insecticide that is ladled onto the backs of cattle to control external parasites. Horses and small livestock are regularly sprayed with diluted insecticides rather than being dipped. Dips are non-detergent products that if applied correctly continue to be active after the animal is dry. Improperly applied insecticidal dips or dips that are too strong or used on the wrong species can be toxic to the animal.

Bathing and Dipping Animals

Dogs should have a nylon collar and leash that is clipped to a ring in the tub or other wall surrounding the tub. Non-skid strips or a rubber bath mat will help prevent the animal from slipping in the tub. Cats can be a challenge to bathe. Placing a window screen or a thick towel in the tub for them to grip with their claws will help. Ferrets usually enjoy bathing and can be secured like a cat. Large animals are usually restrained with a halter and lead rope and hosed outside; avoid bathing these animals in muddy areas because it could cause the animal to slip.

Preparing Animals for Bathing and Dipping:

1. Be sure tub is clean and all necessary items are within reach before beginning the bath. Bathing items include ophthalmic ointment (eye ointment), shampoo, premixed dip, and a towel.

2. Wear protective rubber apron, boots, and gloves if possible to avoid soaking your clothing.

3. Apply ophthalmic ointment before bathing to protect the animal's eyes from chemical injury.

4. Place a small piece of cotton in each ear to prevent water from getting into the animal's external ear canal. DO NOT forget to remove the cotton when bathing is complete.

5. Note the location of any large mats of hair that will interfere with bathing and report these to the proper personnel before bathing. Mats of hair should be clipped before wetting the animal.

6. Before applying water to the animal, check the temperature of the water with your hands to ensure that it will not burn. Animals prefer a cooler bath than people. The water may feel cooler through gloves than it actually is.

Procedure for Bathing Animals

1. Wet animal using lukewarm water in a light spray. Check the temperature on the inside of your wrist periodically during the bath to avoid extreme temperature fluctuations.

2. Apply shampoo as directed on the bottle. Some shampoos must be shaken before application. A cleansing bath is required before applying medicated and insecticidal shampoos.

3. Bathe animals infested with fleas starting at the head and working back. Shampoos containing **insecticides** should only be used if approved by the veterinarian or veterinary technician. These products can have a toxic effect or may react with other medications if used improperly.

4. Lather shampoo into the coat. Insecticidal shampoos should not be applied to the scrotum of male dogs.

5. All shampoos, regardless of type, must be rinsed with generous amounts of clean water.

6. Following bathing, rinses may be applied to the hair coat. Some rinses are formulated to remain on the hair and others are to be rinsed out.

7. Remove the cotton from the external ear canals.

8. Initially, dry the animal with bath towels. If cage dryers or blow dryers are to be used for final drying, do not leave the animal unattended. These dryers can cause an animal to develop **hyperthermia**, a serious medical condition in which the animal can die from overheating. Drying racks or bath towels may be placed in the kennel to dry the underside of the animal.

9. Remove hair or other debris from the bathtub and drain.

10. Clean and sanitize the tub using the proper disinfectant.

11. Wash hands.

Procedure for Dipping Animals

1. Make sure the dipping area has adequate ventilation and wear proper protective clothing. This includes an apron, rubber or latex gloves, and goggles. Many of these dips may be absorbed through the skin and have toxic effects on humans and animals.

2. Dips should be mixed fresh each time in an appropriate container. One container should not be used for more than one brand of dip.

3. Only apply dips to a clean, towel-dried animal. Do not remove cotton placed in the animal's ears before bathing until finished dipping.

4. Apply dip as directed on the container. Use care when handling dips.

5. Rinse dip if necessary. Most dips remain on the animal's coat and are not rinsed off.

6. Remove the cotton from the external ear canals.

7. Dry the animal according to the directions on the dip container. Most dips are less effective if rinsed off the animal or if the animal is toweled or blown dry.

8. Remove hair or other debris from the bathtub and drain.

9. Clean and sanitize the tub using the proper disinfectant.

10. Wash hands.

11. Discard leftover dip properly.

Cage Dryer Use and Safety Precautions

Cage dryers are large electrical blow dryers designed to be hung on the outside of the kennel door. They are adjustable to direct air flow up or down. They usually have three speeds, low, medium, and high. These adjustments affect temperature and might be marked warm, hot, and very hot.

Safe Cage Dryer Use

1. Always place the dryer to the side of a larger kennel so the animal can get away from the direct airflow should it become uncomfortable.

2. Always plug in to a grounded receptacle.

3. Always check cords for fraying and do not use damaged equipment. Report problems with the dryer, mark the dryer, and set it aside. Any sparking is considered dangerous.

4. Be sure the cord, or dryer if placed on the floor, does not lay in puddles of water.

5. Always use low speed, unless you are blow-drying the coat as you brush the animal.

6. Check animals being cage-dried frequently.

7. Report any signs of distress, such as heavy panting or panic, observed in the animal and turn off the dryer immediately.

Recognizing Side Effects of Insecticides

Any insecticide has the potential to cause illness or death in both animals and humans. Even a small amount of insecticidal residues can be harmful to a sensitive individual. The animal care assistant should become familiar with the risks of the products to be used.

Pyrethrins are the oldest and least toxic of the insecticides used in veterinary medicine. Pyrethrin is a derivative of the chrysanthemum, a natural product that is virtually non-toxic to most animals, though overuse can cause toxicity in cats, very young puppies and kittens, and very small animals in poorly ventilated areas. Pyrethrins are seen in shampoo, spray, and dip forms and may be used on many of the common companion animals. They are known for their "quick-kill" effect on insects but have little residual activity. Several synthetic pyrethrins are available. Signs of toxicity are lethargy, salivation, vomiting, and diarrhea. Toxic effects can usually be reversed by washing the insecticide off with plain soap and water.

Carbamates or carbaryl are insecticides that are stronger than pyrethrins but weaker than organophosphates and chlorinated hydrocarbons. Carbaryl usually comes in the form of shampoos and powders. Sevin is a garden dust that can be used in its weakest concentration (5 percent) as a flea and tick powder on dogs and cats over four weeks of age. Signs of toxicity are lethargy, salivation, vomiting, and diarrhea. Toxicity is similar to that of organophosphates but less severe and more easily reversed.

Organophosphates are very strong chemicals that can affect a mammal's nervous system in the same way they affect an insect's nervous system. Organophosphates are commonly available as dips, powders, and pour-ons, but are less popular compared to the new generation of insecticides that are less toxic and equally effective. Cats, especially Persians and Himalayans, are extremely sensitive to organophosphates and should never be treated with such products. Signs of organophosphate toxicity include lethargy, salivation, severe vomiting and diarrhea, constriction of the pupils, breathing difficulties, muscle twitching, and in severe cases, convulsions and death. Organophosphate toxicity must be treated as an emergency with special drugs that counter the effects on the nervous system.

Chlorinated hydrocarbons are insecticidal chemicals that currently are rarely used because of their potential for toxicity and their adverse effects on the environment.

Steps to Take When You Suspect Insecticide Toxicity

1. Report any suspicious toxic signs in recently bathed or dipped animals to the veterinarian immediately. Signs include lethargy or restlessness, a drunken gait, droopy eyelids, drooling, vomiting, diarrhea, twitching, trembling, or seizures.

2. The animal will be washed immediately in plain soap and water to remove insecticidal residues. This helps minimize further absorption through the skin.

3. In the case of carbamate or organophosphate toxicity, immediate treatment with appropriate antidotal drugs will be initiated to reverse the effects on the nervous system before it is too late.

4. Report to the veterinarian any similar feelings you might have after exposure to an insecticide. The veterinarian will recommend immediate specific measures to be taken and refer you to a physician for evaluation and treatment if necessary.

Test Your Knowledge: Complete the following activity sheet to test your knowledge and understanding of the materials you have studied in this lesson.

After you have completed the activity sheets, you may take the written evaluation for this unit. A score of at least 80 percent indicates you may proceed to the next unit. Check with your clinical supervising staff member for skill testing.

Lesson 7: Bathing and Dipping Dogs and Cats

Activity Sheet

1. What is a dip?

2. What is a pour-on?

3. List six steps of procedure for preparing an animal for bathing and dipping.
   a. ______________________________
   b. ______________________________
   c. ______________________________
   d. ______________________________
   e. ______________________________
   f. ______________________________

4. What temperature should the water be for bathing animals?

5. In what direction do you lather an animal infested with fleas?

6. What is hyperthermia?

7. What protective clothing should be worn prior to dipping an animal?

____

____

8. What are the last three steps of procedure after drying the bathed animal?

a. ____

b. ____

c. ____

9. List and describe the four types of insecticides discussed in this lesson.

a. ____

b. ____

c. ____

d. ____

10. List four possible side effects of insecticides.

a. ____

b. ____

c. ____

d. ____

11. What are the first two steps that should be taken after noticing an insecticide side effect in an animal?

a. ____

b. ____

12. What two insecticides require administration of antidotal medication to reverse toxic side effects in an animal?

a. ____

b. ____

Clinical/Laboratory Activities

1. Read the direction and warning labels for shampoos and dips before using products.

2. Prepare animals at the clinic for bathing and dipping as requested by the veterinarian or veterinary technician. Follow the steps of procedure in this lesson and any additional steps included at the clinic.

3. Bathe animals at the clinic as requested by the veterinarian or veterinary technician. Follow the steps of procedure in this lesson and any additional steps included at the clinic.

4. Dip animals at the clinic as requested by the veterinarian or veterinary technician. Follow the steps of procedure in this lesson and any additional steps included at the clinic.

5. Monitor animals bathed or dipped with insecticides for side effects.

Unit Checklist

Student Name ______________________ Overall Unit Rating ________

Activity Sheet: Handling and Restraining Animals Rating ________

Comments: ______________________

____

____

Activity Sheet: Observation Skills Rating ________

Comments: ______________________

____

Activity Sheet: Parasite Identification Rating ________

Comments: ______________________

____

____

Activity Sheet: Cleaning Animal Compartments Rating ________

Comments: ______________________

____

____

Activity Sheet: Feeding Rating ________

Comments: ______________________

____

____

Activity Sheet: Weighing Rating ________

Comments: ______________________

____

____

Activity Sheet: Bathing and Dipping Dogs and Cats Rating ________

Comments: ______________________

____

____

Skill Sheet: Clean Dog/Cat Cage Rating ________
Skill Sheet: Clean and Disinfect Bird Cage Rating ________
Skill Sheet: Clean and Disinfect Rodent/Rabbit Cage Rating ________

Animal Care Assistant

Skill Sheet: Clean and Disinfect Equine/Food Animal Staff Rating ________

Skill Sheet: Clean Feed/Water Containers Rating ________

Skill Sheet: Weigh Animal Using a Platform Scale Rating ________

Skill Sheet: Weigh Animal on a Bathroom/Balance Scale Rating ________

Skill Sheet: Weigh Animal Using a Weight Measurement Tape Rating ________

Skill Sheet: Bathe Animal Rating ________

Skill Sheet: Dipping Animal Rating ________

Written Unit Evaluation Score ________

Additional Comments: ____

____

____

Teacher Signature ______________________________ Date ______________

Student Signature ______________________________ Date ______________

Unit VII

Clinic Procedures

This unit introduces several types of common clinical procedures for small and large animals. You will learn to identify and maintain equipment and instruments used in the veterinary practice. You will also learn about collecting a variety of specimens and assisting with laboratory procedures. The final lesson discusses disposal methods and procedures for bagging dead animals.

Unit Lessons

Routine Clinic Procedures

Caring for Equipment in the Veterinary Clinic

Collecting Specimens

Laboratory Procedures

Animal Disposal

Lesson 1: Routine Clinic Procedures

Objectives:

A. Identify common clinic procedures for small animals.

B. Identify common clinic procedures for large animals.

Key Terms:

- Preventative health care programs
- Vaccination or immunization
- Diagnostic procedures
- Therapeutic procedures
- Medical procedures
- Dental prophylaxis
- Surgical procedures
- Anesthetic procedures

Preventive Procedures

Preventative health care programs are programs designed by the veterinarian to help prevent disease and health problems in an individual animal or herd of animals. In small animal practice, preventative health care is often called "well animal care." Most major health problems in animals are easier to prevent than to treat. Some problems are unavoidable and must be treated as they occur. Preventable health problems include many infectious diseases, parasites, and reproductive problems in pet animals and livestock. Many of the procedures performed in a veterinary practice are performed routinely to prevent problems from developing. Clinical procedures vary with the type of practice and facility and staff capabilities. Certain procedures are done only on cats, dogs, cattle, horses, or birds, etc.

Recommendations for preventative health care are made by the veterinarian according to the animal's risk for a problem. Examples of preventative health care procedures are vaccination of both large and small animals, surgical neutering of many pet and food animals, and external and internal parasite prevention. Good grooming and nutrition are also important for the prevention of disease and parasitism.

Vaccination or immunization is the injection of animals with vaccines developed to produce immunity to specific diseases. Vaccination is an important part of a preventative medicine program for cattle, horses, sheep, goats, swine, poultry, cats, and dogs as it is for humans. In preventative health care programs, a schedule is designed for an individual animal or herd of animals in order to prevent them from getting diseases and parasites. Vaccines are not 100 percent effective or completely risk-free but have been effective in eradicating many devastating diseases.

Vaccines consist of viruses that have been altered to become too weak to cause disease, but strong enough to stimulate an immune response. A bacterin is a vaccine made of altered bacteria. Vaccines may be for a single disease such as rabies, Bordetella, feline leukemia, or brucellosis, or for a combination of diseases. Combination vaccines are often abbreviated. For example if a dog is vaccinated with DA2PL + CPV, it would be vaccinated for the following diseases: D=Canine distemper virus, A2=Canine adenovirus (infectious canine hepatitis), P=Canine parainfluenza virus, L=Leptospirosis, CPV=Canine parvovirus. For the animal to receive the full protection from a vaccine, two or more inoculations must be given at the proper interval, then "boosted" as recommended, usually annually. Vaccination programs may vary from practice to practice, but the basics are the same.

The following is a list of vaccines currently available for the different species.

Dogs:
- Canine distemper (CDV)
- Canine adenovirus (CAV)
- Infectious canine hepatitis (ICH)
- Canine parainfluenza
- Leptospirosis (Lepto)
- Canine parvovirus (CPV) (Parvo)
- Canine coronavirus (Corona)
- Infectious tracheobronchitis (kennel cough) (ITB)
- Lyme disease
- Rabies

Cats:
- Feline viral rhinotracheitis (FVR)
- Feline calicivirus (FCV)
- Feline panleukopenia (distemper)
- Feline leukemia (FeLV)
- Feline infectious peritonitis (FIP)
- Rabies

Horses:
- Tetanus
- Equine encephalomyelitis (VEE, WEE, EEE)
- Equine rhinopneumonitis (rhino)
- Equine influenza
- Strangles
- Equine viral arteritis
- Potomac horse fever

Cattle:
- Infectious bovine rhinotracheitis (IBR or Rednose)
- Parainfluenza 3 (PI3)
- Bovine respiratory syncytial virus (BRSV)
- Bovine viral disease (BVD)
- Haemophilus somnus
- Pasteurella multocida & Pasteurella haemolytica
- Leptospirosis
- Vibriosis
- Trichomoniasis
- Brucellosis (OCV-official calfhood vaccine), (Bangs)
- Clostridial organisms
- Moraxella (pinkeye)

Pigs:
- Leptospirosis
- Porcine parvovirus (PPV)
- Transmissible gastroenteritis (TGE)
- Porcine rotavirus
- Clostridium perfringens Type C
- Neonatal porcine colibacillosis
- Swine dysentery
- Bordatella, Pasteurella, & Haemophilus
- Erysipelas
- Pseudorabies
- Streptococcus

Sheep and Goats:
- Enterotoxemia (overeating disease)
- Tetanus
- Contagious ecthyma (soremouth, orf)
- Foot rot
- Bluetongue (BT)
- Vibriosis
- Chlamydia

Diagnostic Procedures

Diagnostic procedures are done in order to recognize or diagnose a disease or parasite problem, to evaluate the severity of an injury, or to evaluate the injury's response to a therapy. Diagnostic procedures may be recommended routinely or only for a specific problem. Common diagnostic procedures include physical examinations, laboratory tests, and radiographs. Exploratory surgery is an example of a surgical diagnostic procedure.

Common Diagnostic Procedures in Small Animal Practice:

Fecal flotation
Urinalysis
Heartworm checks in dogs

Feline leukemia and feline immunodeficiency tests in cats
Complete blood counts (CBCs)
Blood chemistries
Skin scrapings (samples of skin evaluated microscopically for parasites)
Cultures of body secretions for bacterial identification and selection of appropriate antibiotics
Neurological examinations (evaluation of the nervous systems by checking reflexes)
Special eye examinations such as measuring tear production or intraocular (eye) pressure
Ultrasound (a non-surgical method of evaluating soft tissues; often used for pregnancy diagnosis or evaluating heart problems)
Radiographs (X-rays)
EKG (electrocardiogram, an evaluation of the electrical activity of the heart muscle)
Biopsies (microscopic examination of large sections of tissue specimens)
Fine needle aspirate (microscopic examination of very small tissue specimens)

Common Diagnostic Procedures in Food Animal Practice:

Fecal egg counts
Tuberculin skin tests
Brucellosis tests
Breeding soundness examinations/sperm counts

Common Diagnostic Procedures in Equine Practice:

Fecal egg counts
Coggins tests (blood tests for Equine Infectious Anemia)
Breeding soundness examinations
Uterine cultures in mares (to prevent fertility problems)
Lameness/nerve blocks

Many of the laboratory tests listed under small animals are done in the other species, including exotic animals. The veterinarian is often limited by the facility's scope of practice and financial restrictions imposed by the client's budget. Pet insurance companies have yet to provide universal coverage for the more common medical problems. Economics determines the tests done on food animals. Illnesses are often treated symptomatically rather than with diagnostic testing. In horses, the size of the patient makes diagnosis and treatment expensive. Often, the value of the patient is considered before making the decision to pursue an expensive course of the treatment. The replacement cost of many small pocket pets is much less than treatment costs. Many clients choose not to treat these animals unless they are extremely emotionally attached to them. Practicality is another issue. Some animals are too small, too large, or too uncooperative to allow extensive testing.

Therapeutic Procedures

Therapeutic procedures are procedures that involve therapy or treatment for specific diseases or other physical or behavioral abnormalities. Therapeutic procedures may be medical, such as treating an infection with antibiotics or giving a blood transfusion, or surgical, such as repairing a broken leg.

Medical procedures are procedures that diagnose or treat specific conditions with medicine instead of surgery. Some are very simple and others are very complicated.

Routine Medical Procedures in Small Animal Practice:

Ear flush (deep cleansing of the ear canal commonly done in dogs with ear infections)

Toenail trims (trimming the toenails of dogs, cats, pocket pets, and birds)
Dental prophylaxis (scaling the tartar off and polishing the teeth of dogs and cats; usually done under general anesthesia)
Tattooing and microchipping
Applying medicated shampoos and dips
Applying insecticides for external parasite control
Treating heartworm disease
Wing clipping (cutting the length of the primary feathers in pet birds to limit their ability to fly)
Strategic deworming
Beak trimming (shortening and smoothing the beak of pet birds to prevent overgrowth from interfering with their ability to eat)
Teeth clipping (clipping the continuously growing teeth of rodents such as rabbits and guinea pigs to prevent overgrowth from interfering with their ability to eat)

There are many other specialized forms of therapy including physical, behavioral, nutritional, and alternative. The medical procedures discussed in this lesson are only a few of the available procedures.

Routine Medical Procedures in Food Animal Practice:

In food animal practice, routine medical procedures are limited to preventative health care and reproductive management for economic reasons. Many of these are actually done by the producer rather than the veterinarian.

Vaccination
Castration
Dehorning
Applying fly tags
Applying pour-ons for insect control
Routine deworming
Hoof trimming in smaller ruminants
Clipping the teeth of baby pigs
Branding and tattooing
Embryo transfer (procedure performed by specialty veterinarians and animal reproductive physiologists)

Routine Medical Procedures in Equine Practice:

Equine practice involves predominately preventative health procedures, reproductive management, and treatment of exercise-related injuries, foot problems, and other injuries and illnesses.

Vaccination
Castration of non-breeding male animals (geldings)
Floating the teeth (filing down rough edges to allow productive chewing and better feed utilization)
Routine deworming
Spraying with fly sprays or hanging fly repellants from the halter
Routine hoof care and periodic trimming/shoeing by a qualified farrier (horseshoer)
Sensible conditioning exercise (a medical necessity in the athletic horse)
Culture and biopsy of uterine tissues for breeding management
Careful attention to good quality nutrition and sanitation measures, especially in stalls
Routine blood cultures for Salmonella in hospital settings

Surgical procedures involve the manual manipulation of internal or external tissues with surgical instruments. Surgical procedures may be done under a general or a local anesthetic, or in some cases, with no anesthetic. **Anesthetic procedures** are any procedures that require anesthesia in order to be completed efficiently, effectively, and painlessly. Anesthetic procedures include almost all surgeries, dental prophylaxis, and some specialized procedures such as spinal taps and special radiographs.

Small Animal Preventative Surgery:

Any number of surgical procedures may be performed to treat specific conditions. Animal owners also choose routine preventative surgical procedures to prevent reproductive problems and for animal population control. These procedures include:

Neutering (castration in the male and spaying in the female dog, cat, ferret, or rabbit)
Castration (removal of the testicles)
Spaying (removal of the ovaries and uterus called a ovariohysterectomy or OHE)

Owners may choose to have routine elective surgical procedures for cosmetic purposes or to protect the animal from injury or its surroundings from damage. These procedures include:

Declawing (onychectomy - removal of the tip of the toe from which the claw grows in cats)
Tail docking (surgically amputating the tail at a specified length in certain breeds, including Cocker Spaniels, Doberman Pinschers, Rottweilers, Poodles, and German Shorthaired Pointers; preferably done at 3-5 days of age without benefit of anesthesia or later under general anesthesia) Some dogs are naturally bobbed-tailed.
Dewclaw removal (removal of the small residual "thumb" on the inside of the upper paw of dogs; can be done when tails are docked or later under general anesthesia)
Ear cropping (cutting off part of the flap of the ear in certain breeds of dogs: Doberman, Boxer, and Great Dane)

Food Animal and Equine Surgical Procedures:

Castration (done in male animals not to be bred to reduce aggressive behavior and to encourage maximum weight gain in food animals and horses)
Dehorning (removal or destruction of the horn of certain breeds of livestock to reduce injuries associated with the horns; usually done with heat, surgery, or caustic creams with good restraint and local anesthetic)
Spaying (removal of the ovaries in feedlot heifers not to be bred to minimize weight loss related to heat cycles)
Tail docking (done in lambs to prevent feces from collecting on the tail)
Hernia repair in baby pigs

The animal care assistant may be working in a wide variety of facilities and types of practices. He or she must become familiar with the types of procedures commonly performed by the veterinarian in charge. The assistant will not have primary responsibility for performing these procedures or interpreting them but may assist with procedure set up, collecting, identifying, and storing specimens, observing patient's recovery period, cleaning up afterward, and caring for the equipment. Pride and care from everyone involved are important in providing the best service possible for the patient and the client.

Test Your Knowledge: Complete the following activity sheet to test your knowledge and understanding of the materials you have studied in this lesson.

Lesson 1: Routine Clinic Procedures

Activity Sheet

1. What is preventative health care and why is it important?

   ____

   ____

2. List three examples of routine preventative procedures performed on small animals.

   a. ____

   b. ____

   c. ____

3. List three examples of routine preventative procedures performed on large animals.

   a. ____

   b. ____

   c. ____

4. What is a vaccination or immunization?

   ____

   ____

5. List three examples of diseases prevented with vaccinations in small animals.

   a. ____

   b. ____

   c. ____

6. List three examples of diseases prevented with vaccinations in large animals.

   a. ____

   b. ____

   c. ____

7. What is a diagnostic procedure?

8. List two examples of diagnostic procedures performed on small animals.

   a. ______________________________

   b. ______________________________

9. List two examples of diagnostic procedures performed on large animals.

   a. ______________________________

   b. ______________________________

10. What are therapeutic procedures?

11. What is the difference between medical procedures and surgical procedures?

12. List two examples of medical procedures performed on small animals.

    a. ______________________________

    b. ______________________________

13. List two examples of medical procedures performed on large animals.

    a. ______________________________

    b. ______________________________

14. List two examples of surgical procedures performed on small animals.

    a. ______________________________

    b. ______________________________

15. List two examples of surgical procedures performed on large animals.

    a. ______________________________

    b. ______________________________

Clinical/Laboratory Activities

1. Learn the more common vaccination abbreviations and schedules for different species.
2. Discuss with the veterinarian or veterinary technician common diagnostic, medical, and surgical procedures performed at the clinic. Ask to observe procedures and clarify terminology used for different procedures with the veterinarian or veterinary technician.
3. If asked to assist with a procedure, be sure that you understand your responsibility completely.

Lesson 2:
Caring for Equipment in the Veterinary Clinic

Objectives:

A. Identify common equipment and instruments used in veterinary practice.

B. Identify the importance of maintaining and appropriately using equipment and supplies.

C. Differentiate disposable items from reusable items.

D. Clean equipment.

Key Terms:

- Microscope
- Centrifuge
- Refractometer
- Radiograph unit
- Film cassettes
- Radiograph processor
- Radiograph developing tanks
- Surgical instruments
- Ultrasonic cleaning
- Instrument milk
- Drape
- Surgical packs
- Vaporizer
- Endotracheal tubes
- Ultrasonic dental scaler
- Mouth gags
- Electrocardiograph machine
- ECG or EKG
- Endoscope
- Clippers

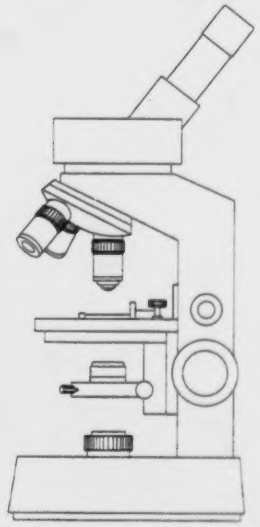
Much of the equipment in a veterinary facility is expensive, sensitive, and fragile. Veterinarians often purchase used equipment from human hospitals in order to keep down their costs. It is important to take proper care of this equipment to avoid replacement costs and the inconvenience of mechanical failure. The veterinarian or the veterinary technician is responsible for equipment care. The animal care assistant should never attempt any equipment maintenance without receiving proper training and authorization from his or her supervisor.

Commonly Used Equipment and Instruments

Laboratory Equipment

The **microscope** is a laboratory instrument usually equipped with four different lenses of different magnifications. Figure 2.1 illustrates a microscope. A microscope can magnify specimens from 40 to 1,000 times their actual size. A microscope is a valuable, fragile instrument with delicate lenses that are used to evaluate fecal, urine, blood, and

Figure 2.1 - Microscope

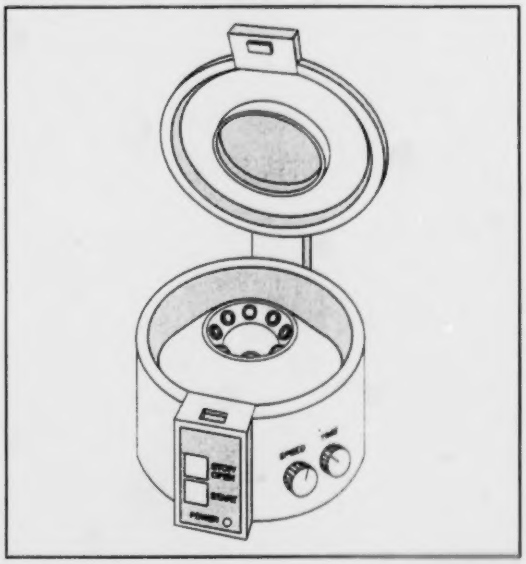


fine needle aspirates for diagnostic purposes. Microscopes should be kept dry and dust-free. Dust-covers should be placed on the microscope when not being used. Lens paper is a fine, special type of paper designed to clean the lenses without scratching them, much like the paper designed to clean eyeglasses. Never use Kleenex or other paper or cloth products to clean the lenses. Isopropyl or rubbing alcohol may be used on the lens paper to dissolve build-up immersion oil, a special oil used to immerse the 100X lens for visualizing very small cellular characteristics. Periodic maintenance and adjustments are required to keep a microscope functioning properly.

Microscope slides and cover slips are glass items that must be handled with care. Cover slips are especially fragile and if mishandled can be easily broken. These items are considered disposable equipment.

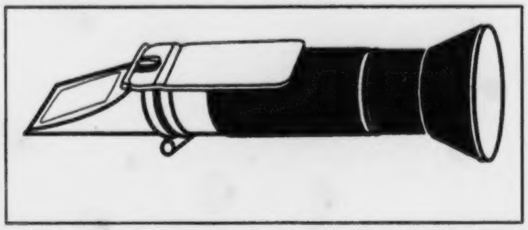
The **centrifuge** is a laboratory instrument designed to spin at a variety of speeds to separate solids from liquids such as serum from a blood clot or urine sediment from the urine fluid. Figure 2.2 illustrates a centrifuge. Centrifuges are fairly low maintenance but must be kept clean and lubricated. Running an unbalanced centrifuge in which tubes have unequal contents is hard on the machinery and should be avoided.

Figure 2.2 - Centrifuge



A **refractometer** is a small, hand-held instrument used in the laboratory to measure urine specific gravity and total protein levels in blood serum. The glass surface must be cleaned with distilled water and lens paper to avoid mineral build-up and scratches. Figure 2.3 illustrates a refractometer.

Figure 2.3 - Refractometer



A clinic may have special equipment used to perform complete blood counts (CBCs) and some blood chemistry values. The simplest equipment items include Coulter counters and glucometers. The animal care assistant will not be involved in cleaning these items.

Blood tubes, fecal and urine tubes, and Culturettes® are specimen containers that are used only once. After use, these containers are medical waste and must be disposed of according to clinic policy and procedure. Blood tubes and Culturettes® have expiration dates on their labels and must be disposed of and replaced as needed.

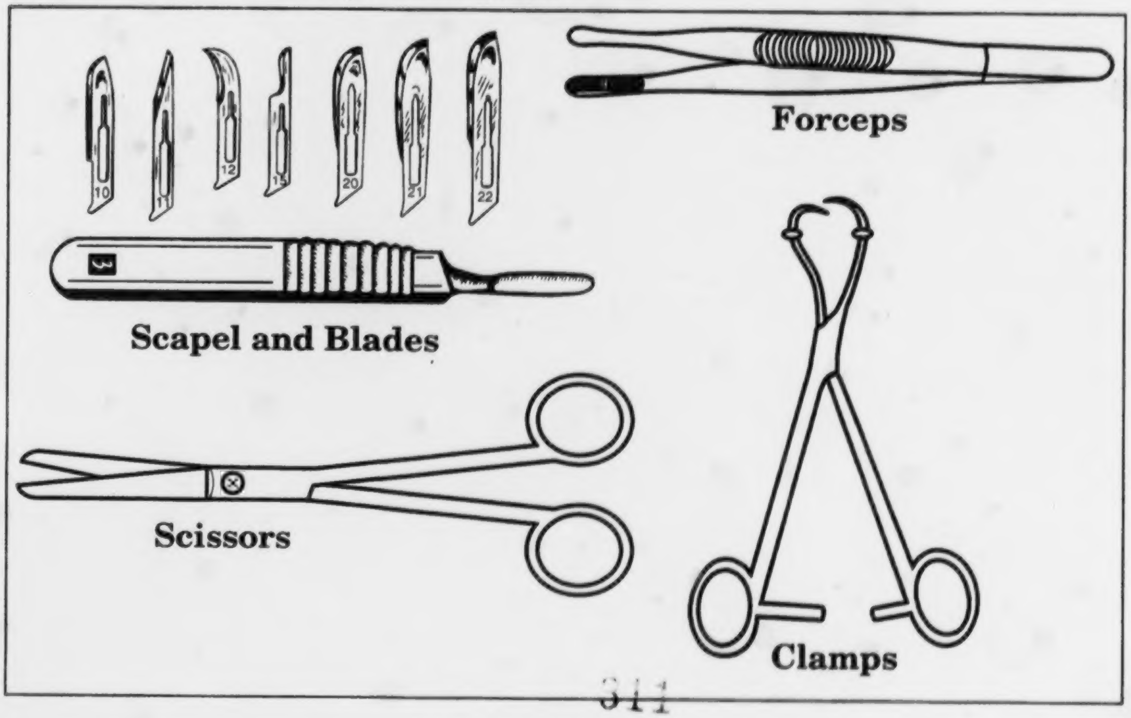
Radiographic Equipment

A **radiograph unit** is the machine used to take radiographs or x-rays. It is a very expensive piece of equipment and is usually maintained by specialists hired by the veterinarian. The staff's most important responsibility is to keep its housing clean. The radiograph unit must be warmed up before use but should not be left on too long as it may overheat. **Film cassettes** are hinged cases into which radiograph film is placed to protect the film while the radiographs are being taken. The screens or lining material must be cleaned periodically with the proper cleaning agent. A **radiograph processor** is a machine that develops the film taken by the radiograph unit. An automatic processor is another expensive machine that requires careful maintenance. It must be cleaned and the developing fluids changed periodically by staff, but mechanical adjustments are usually done by an outside contractor. The old method of developing radiographs in **radiograph developing tanks** is still being used at some clinics. These are simply deep sinks with three divisions, one for developer, one for a water rinse, and one for fixer. These tanks must be kept clean and the fluids changed according to the veterinarian's or veterinary technician's instructions. The developer and fixer are harsh chemicals that should not be spilled on skin, clothing, or surfaces.

Surgical Equipment

Surgical instruments are used for fine surgical procedures. Common examples include scissors, clamps, scalpels, and forceps. Figure 2.4 illustrates a variety of surgical instruments. There are many specialized instruments, all with special names. Surgical instruments are made of special, rust-retardant metals; many have sharp edges and hinges. These instruments are reusable and with proper care can last for many years. Preparing instruments for use includes several processes: presoaking, precleaning, drying, lubricating, wrapping or bagging, sterilizing, and storing properly.

Figure 2.4 - Variety of Surgical Instruments



Always wear latex gloves when handling contaminated instruments. Rough handling or dropping of instruments can damage the sharp edges and hinges. Scalpel blades are disposable items and should be removed before presoaking or scrubbing the handle. Figure 2.4 includes an illustration of a scalpel and different scalpel blades. Presoaking in the appropriate disinfectant solution helps to prevent blood and tissue from drying on instruments and minimizes the risks of airborne transmission of microorganisms. Surgical instruments must be precleaned or scrubbed manually with a disinfectant soap, rinsed thoroughly with water after each use, and then patted dry with a clean paper towel. **Ultrasonic cleaning** is an alternative to manual precleaning and lessens the risk of being cut by sharp, contaminated instruments. After presoaking, instruments are placed in a basket, immersed into a special disinfectant solution, and subjected to sound waves for five minutes before being rinsed thoroughly and patted dry. Always examine the instruments after cleaning them to be sure that all debris has been removed. Ultrasonically cleaned instruments may need additional manual cleaning to remove stubborn debris.

Surgical instruments should be soaked in **instrument milk** after being scrubbed clean. Instrument milk is a creamy solution diluted with distilled water that lubricates and preserves metals. Instruments may then be wrapped in a **drape**, placed into special disposable plastic bags or pouches, and labeled. Drapes are sterile coverings used in an operating room that may be either disposable or reusable. After wrapped and labeled, the instruments are autoclaved or cold-sterilized for sterile or near-sterile procedures. Instruments are commonly wrapped in groups called **surgical packs** according to the procedure in which the instruments are used, such as a spay, orthopedic, or ophthalmic pack. Surgical packs are sealed with a special tape with lines that darken when properly sterilized. Proper labeling is done with a permanent marker and includes the name of the instrument or pack, the date of packing and sterilization, and the initials of the person preparing the instruments. Wrapping or bagging instruments prevents them from becoming contaminated after sterilization and during storage.

Procedure for Wrapping Instruments:

1. Put on latex gloves.
2. Properly prepare instruments by presoaking, precleaning, and drying and lubricating as needed.
3. Place instruments or tray in the center of the wrap.
4. Fold up bottom corner and turn back two inches of end.
5. Fold left corners over the edge of the tray or instruments.
6. Fold right corners over to other edge of the tray or instruments.
7. Fold top corner down to the middle and secure with tape.
8. Label wrapping with:
    a. names of instruments or type of tray setup,
    b. date of wrapping, and
    c. initials or name.
9. Place in proper sterilization area or sterilizer.
10. Remove gloves.

Store sterile packages in a dry, enclosed, low dust area. If the packages become torn or punctured, instruments must be rewrapped and sterilized. There is no exact time for which packages may be safely stored. The oldest sterilized packs should be placed and used before newer sterilized packs. Instruments from sterile packs should always be placed on a sterile field.

Anesthetic Equipment

The **vaporizer** is a very expensive, sensitive piece of equipment which must be handled with care. It is the most important functional unit of the anesthetic gas machine. Gas anesthesia is also called "inhalant anesthesia" because the patient is anesthetized by breathing the vapors of anesthetic gas. Vaporizers are specific to different types of inhalant gases and hold the actual anesthetic in liquid form. Isoflurane, halothane, and metofane are the most common anesthetic gases. A gas anesthetic agent should never be put into a vaporizer intended for another type of gas. All of these products are highly flammable and corrosive. They evaporate very quickly if left open to the air. The vaporizer should be filled just prior to the procedure and leftover liquid should be drained back into the original container when the day's procedures are finished. Vaporizers should be sent out annually for service and recalibration to ensure optimal functioning. The veterinary technician is usually responsible for the anesthetic machine care but the animal care assistant may be recruited to help with the simpler maintenance procedures.

Inhalant anesthetic gases are mixed with oxygen and sometimes nitrous oxide as they are delivered to the patient. Oxygen and nitrous oxide are compressed in tanks; green tanks for oxygen and blue tanks for nitrous oxide. These tanks have gauges which show how much compressed gas remains in the tank. Empty tanks require manual changing with full tanks. These tanks must be handled with extreme care because tanks can explode if dropped.

The anesthetic machine must be kept clean and dust-free. The hoses and electrical connections should be monitored for damage and replaced when signs of wear are evident. The carbon dioxide absorbent canister contains a granule material, usually soda-lime or barium hydroxide-lime, which absorbs the carbon dioxide from the patient's exhaled breaths. These products must be changed after 6-8 hours of use. The granules change color from white to blue when no longer effective, but may revert to the original color when allowed to rest.

Corrugated plastic tubes and a Y-piece connect the gas anesthetic machine to the patient via **endotracheal tubes**. Endotracheal tubes are semi-rigid plastic tubes which come in a variety of sizes. Endotracheal means "into the trachea." These tubes deliver anesthetic gases directly into the lungs. Patients may be masked by connecting a cone-shaped mask to the Y-piece and placing it over the patient's muzzle. Hard to handle patients may be placed into an induction chamber, an aquarium-like chamber into which the anesthetic gases are channeled. Once the patient is reasonably anesthetized in the chamber, an endotracheal tube or mask may be used to maintain anesthesia. In human medicine, all the plastic tubes are considered disposable, but in veterinary medicine, tubes are typically rinsed out and disinfected by cold sterilization for reuse until worn out or damaged.

Miscellaneous Equipment

An **ultrasonic dental scaler** is a machine that cleans and polishes teeth with a combination of a vibrating metal tip and water mist. The water mist has two purposes; it rinses away blood and dental tartar and minimizes damage to the teeth's enamel by the heat generated during the process. Maintenance other than mechanical repair consists of cleaning and disinfecting the metal tips, housing, and cords attached to the machine. Any frayed cords should be reported immediately to prevent electrical shocks to the patient or the technician. Many dental instruments are special metal tools used for manually scraping dental tartar from teeth or for tooth extractions. **Mouth gags** are metal tools equipped with a spring designed to hold the patient's mouth open while the veterinarian or veterinary technician works in the animal's mouth. Dental instruments are cleaned in the same manner as surgical instruments but are usually only cold-sterilized rather than autoclaved.

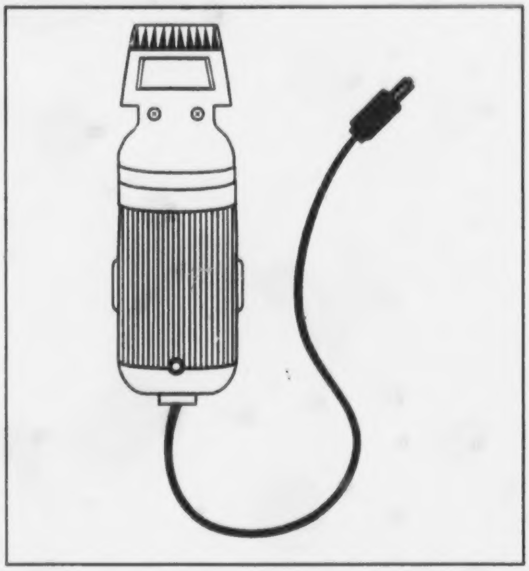
An **electrocardiograph machine** is more commonly called an **ECG** or **EKG**. This is an expensive, sophisticated machine that measures the electrical activity of the heart by the attachment of electrodes to the patient in strategic locations. Basic maintenance includes keeping the paper and ink supply stocked and the housing, cords, and electrodes clean and in good repair. Special maintenance is performed by an outside contractor.

An **endoscope** is another sophisticated instrument that allows the veterinarian to look at internal structures three-dimensionally. Staff must keep the housing and cords clean and in good repair, but mechanical service is done by an outside contractor.

The restraint devices discussed in Unit VI, Lesson 1 are mostly simple, low-maintenance equipment. Care of these items includes laundering and disinfecting cloth or nylon muzzles and examining mechanical parts for breakage and fraying fabric. Report any damage of restraint devices immediately to prevent equipment failure during use.

Electric **clippers** are used frequently to remove hair from the skin during surgical preparation and in wound treatment. Figure 2.5 illustrates electric hair clippers. Several blade types are available, but the most common are the #40 for surgical prep to the skin and #10 for clipping hair close but not removing it entirely. The blades are removable for cleaning, disinfecting, and sharpening but are reused until they become rusty or the teeth are broken. Special lubricant/coolant sprays are applied during clipper use and after cleaning.

Figure 2.5 - Hair Clippers



Test Your Knowledge: Complete the following activity sheet to test your knowledge and understanding of the materials you have studied in this lesson.

Lesson 2: Caring for Equipment in the Veterinary Clinic

Activity Sheet

1. List an instrument for each of the following categories and describe the animal care assistant's responsibility for its care.

   Laboratory equipment:

   Radiographic equipment:

   Surgical equipment:

   Anesthetic equipment:

2. What is ultrasonic cleaning?

   ____

   ____

   ____

3. What three items of information should you write on surgical packs?

   a. ______________________________

   b. ______________________________

   c. ______________________________

Label the following equipment with a "D" if it is disposable, "R" if it is reusable, and "E" if it may be either disposable or reusable.

______4. Scalpel blades

______5. Culturettes®

______6. Microscope slide

______7. Drapes

______8. Scalpel

______9. Mouth gags

______10. Endotracheal tubes

______11. Clipper blades

Match the instruments or machines in Column A to each item's purpose in Column B by writing the corresponding letter in the blank.

Column A

______12. Vaporizer

______13. Mouth gags

______14. ECG or EKG

______15. Endoscope

______16. Surgical pack

______17. Microscope

______18. Film cassette

______19. Endotracheal tube

______20. Centrifuge

______21. Refractometer

______22. Clippers

Column B

a. A laboratory instrument designed to spin at a variety of speeds to separate solids from liquids such as serum from a blood clot.

b. Used to remove hair from the skin during surgical preparation and in wound treatment.

c. Instruments wrapped in groups according to the procedure for which the instruments are used.

d. The most important functional unit of the anesthetic gas machine.

e. Hinged cases into which radiographic film is placed to protect the film while the radiographs are being taken.

f. A sophisticated instrument that allows the veterinarian to look at internal structures three-dimensionally.

g. Metal tools equipped with a spring designed to hold the patient's mouth open while the veterinarian or veterinary technician works in the animal's mouth.

h. A small, hand-held instrument used in the laboratory to measure urine specific gravity and total protein levels in blood serum.

i. Semi-rigid plastic tubes that deliver anesthetic gases directly into the lungs of the patient.

j. A laboratory instrument equipped with different lenses used to magnify specimens from 40 to 1,000 times their actual size.

k. An expensive, sophisticated machine that measures the electrical activity of the heart by the attachment of electrodes to the patient in strategic locations.

Clinical/Laboratory Activities

1. Discuss your responsibilities for equipment maintenance and cleaning with the veterinarian or veterinary technician. Learn what equipment is considered disposable.

2. Using the instructions in this lesson and direction from the veterinarian or veterinary technician, clean and prepare surgical wraps for sterilization.

Lesson 3: Collecting Specimens

Objectives:

A. Identify all types of specimens collected.

B. Collect a fecal specimen.

C. Collect a voided urine specimen.

D. Label and store all types of specimen containers.

Key Terms:

- Specimen
- Fecal specimens
- Fecal loop
- Urine specimens
- Voided samples
- Catheterization
- Cystocentesis
- Culture/sensitivity
- Culture medium
- Culturettes®
- Venipuncture
- Whole blood samples
- Serum samples
- Skin scrapings
- Cytology
- Biopsy
- Free catch

A **specimen** in veterinary medicine is a representative sample of any material that can be used to diagnose disease or parasitism. Specimens may include feces, body fluids such as blood, urine or pus, skin scrapings, fine needle aspirates of lumps and bumps, or whole sections of tissue. The veterinarian often delegates sample collection to other staff members. The animal care assistant will probably only collect fecal samples off the ground and litter pans and free-catch urine samples. This is an important responsibility because improper collection technique and handling can result in inaccurate test results. The collection method and tools must be kept clean to avoid contamination of the specimen. Specimens must be labeled clearly and stored properly to ensure accurate test results.

Types of Specimens

Fecal specimens may be requested for diagnosis of intestinal parasites or other intestinal infections. A teaspoon of feces less than 24 hours old is recommended for fecal flotation. Fecal specimens may be picked up off the ground, out of a litterpan, or collected with a **fecal loop**, a lubricated device inserted into the rectum of the patient. Any adult worms observed in specimens should be reported to the veterinarian because the parasite eggs may not always show up under the microscope. Fecal specimens that are not tested immediately should be refrigerated.

Urine specimens are used to diagnose urinary tract infections. Urine samples are collected in one of three ways. **Voided samples** are urine samples caught in a clean container intended for liquid samples as the animal urinates on its own. Urine may also be collected by **catheterization**, the insertion of a sterile, plastic tube into the urethra, or by **cystocentesis**, tapping the bladder with a hypodermic needle through the abdominal wall. Cystocentesis is preferred when an uncontaminated sample is desired for bacterial culture. Samples collected by voiding or catheterization may be contaminated by material in the urethra or external genitalia. Urine samples should be refrigerated and examined within 12 hours of collection. Routine urinalysis involves measuring substances such as blood and protein in the urine, its concentration and sediment, and solid material such as cells and bacteria.

Culture/sensitivity is the laboratory process of examining body fluids, tissue, or excretions to identify which bacteria is causing an infection and which antibiotics should be used. A culture is a laboratory test involving the cultivation of microorganisms or cells in a **culture medium**. A culture medium is a substance in which microorganisms or cells can grow. A sensitivity test is a laboratory method for testing the effectiveness of antibiotics on an organism. It is especially important that samples to be cultured are uncontaminated and stored properly. **Culturettes®** are small, sterile swabs with attached reservoirs that contain special culture media that encourages bacteria to grow. Whenever possible, Culturettes® are used to collect and transport samples for culture and sensitivity testing. If Culturettes® are unavailable, sterile red-topped blood collection tubes may be used for transporting body fluids or sterile swabs soaked in a specimen.

Venipuncture is the collection of blood samples using a hypodermic needle. Specific tests are run on specific types of blood samples collected in different blood tubes for different purposes. The animal care assistant may be asked to restrain an animal during venipuncture. Restraining techniques for this procedure are discussed in Unit VI, Lesson 5.

Whole blood samples are often collected to evaluate patients for infections and anemia. Whole blood is collected into lavender-topped blood tubes containing an anticoagulant, a substance that prevents the blood from clotting. Tests commonly run on whole blood include CBCs (complete blood counts), heartworm checks, and FELV/FIV tests. Whole blood should be refrigerated if the tests are not to be run immediately.

Serum samples are blood samples collected into red-topped or "clot" tubes. The blood is allowed to clot in the tube and then centrifuged, spun at high speed, to separate the serum from the clot. The serum is then drawn immediately off the clot to avoid misleading results. Serum samples are used to measure substances in the blood such as electrolytes (sodium, chloride, potassium, etc.), enzymes that reflect kidney, liver, and muscular activity, protein, and blood sugar. These tests are called blood chemistries. Serum should be refrigerated if tests are not to be run immediately. Unlike whole blood samples, serum samples can be frozen for transport.

Skin scrapings are specimens collected from the skin by scraping its surface with a scalpel blade. Skin scrapings are mixed with mineral oil and examined under the microscope to diagnose mange mites or other skin conditions. Ear swabs may be examined in a similar manner to look for ear mites. Skin scrapings and scabs in suspected fungal infections may also be planted in special fungal culture media, Dermatophyte Test Media (DTM).

Cytology is the study of cells. Cytological examination is done under the microscope. Swabs of material from an infected ear or wound are spread on a microscope slide and stained to evaluate the types of cells in the material. Fine needle aspirates from lumps and bumps are prepared in the same way to diagnose the cause of the mass.

Biopsy is the removal of a large tissue sample for microscopic examination and diagnosis. Biopsy samples are cut into sections and immersed in formaldehyde, a preservative that prevents deterioration of the tissue before examination. Specimens should be placed in the formaldehyde immediately but do not need to be refrigerated. These samples are sent to an outside laboratory for a specialist to examine.

Fecal Collection

Many practices do routine fecal examinations as part of the yearly preventive health examination and to diagnose medical problems like diarrhea. The easiest method of collection is to follow the animal and collect a small, teaspoon-sized sample of feces when it defecates. Samples must be fresh, within 24 hours after defecation, and refrigerated until the time of evaluation. Usually clients are instructed to bring a fecal or stool sample with them on their visit.

Procedure for Collecting a Fecal Sample:

1. Put on gloves.
2. After the animal defecates, collect a teaspoon-sized sample of feces with a gloved hand or wooden tongue depressor and place in a container or cup.
3. Remove gloves.
4. Wash hands.
5. Label the container with the animal's name and patient number as directed by the veterinary technician or veterinarian.
6. Present sample to the appropriate staff member, veterinary technician, or veterinarian, or store properly.

Urine Collection

There are several different methods of collecting urine. Urine samples need to be handled carefully to avoid contamination from external sources. Never use dirty collection tubes, cups, etc. **Free catch** is the most common method. Urine is collected while the animal is voiding normally, usually during a walk outside. Some dogs are shy and will stop urinating when approached rapidly. Therefore, approach slowly. Collecting urine from cats can be a frustrating experience. Some cats will not urinate without litter, and cystocentesis may be the only option. Placing a sheet of plastic wrap, packing peanuts, or nonabsorbent litter in a litter box may be useful.

Free Catch Procedure for Collecting Urine Samples:

1. Slowly place a small container or cup under the animal's urine stream to collect urine.
2. Label the container or cup as directed by the veterinary technician or veterinarian.
3. Place the cup in appropriate area of the clinic, or refrigerate.
4. Wash hands.

Labeling and Storing Specimen Containers

All specimens collected should be labeled clearly with the patient's name and number, client's name, date and/or time, and stored properly. This is particularly important when dealing with sick patients; writing the wrong patient's name or number could affect the treatment protocol. Sloppiness in specimen collection can cause confusion and invalid results. Handle collected blood samples carefully; some samples, such as blood and urine, can be damaged if not handled gently. Shaking or exposing the blood samples to temperature extremes can damage the sample and affect the diagnostic results. Refrigeration of blood, urine, and fecal samples is important to avoid deterioration before the test is performed.

Test Your Knowledge: Complete the following activity sheet to test your knowledge and understanding of the materials you have studied in this lesson.

Lesson 3: Collecting Specimens

Activity Sheet

1. List four types of specimens and a method of collection for each.

   a. ____________________

   b. ____________________

   c. ____________________

   d. ____________________

2. List four types of specimens that must be refrigerated if being stored before testing.

   a. ____________________

   b. ____________________

   c. ____________________

   d. ____________________

3. What are the six steps for collecting a fecal specimen?

   a. ____________________

   b. ____________________

   c. ____________________

   d. ____________________

   e. ____________________

   f. ____________________

4. What are three items of information that should be written on every sample label?

   a. ____________________

   b. ____________________

   c. ____________________

Match the terms in Column A with the appropriate definition in Column B by writing the corresponding letter in the blank.

Column A

_____ 5. Cystocentesis

_____ 6. Biopsy

_____ 7. Venipuncture

_____ 8. Fecal loop

_____ 9. Specimen

_____ 10. Cytology

_____ 11. Culture/sensitivity

_____ 12. Serum sample

_____ 13. Catheterization

_____ 14. Culturettes®

_____ 15. Whole blood sample

_____ 16. Skin scraping

Column B

a. The removal of a large tissue sample for microscopic examination and diagnosis. Samples are cut into sections and immersed in formaldehyde.

b. The collection of blood samples using a hypodermic needle.

c. The study of cells by examination under a microscope. Swabs of material or fine needle aspirates are spread on a microscope slide and stained to evaluate the types of cells in the material.

d. Also called blood chemistries, blood samples collected in red-topped tubes that clot in the tube and are then centrifuged to measure substances in the blood.

e. Laboratory process of examining body fluids, tissue, or excretions to identify which bacteria is causing an infection and which antibiotics should be used.

f. A lubricated device inserted into the rectum of the patient to collect feces.

g A representative sample of feces, body fluids such as blood, urine or pus, skin scrapings, fine needle aspirates of lumps and bumps, or whole sections of tissue used to diagnose disease or parasitism.

h. The insertion of a sterile, plastic tube into the urethra to collect urine.

i. Small, sterile swabs that are immersed into special culture media that encourage bacteria to grow; used to collect and transport samples for culture/sensitivity testing.

j. Specimens collected from the skin by scraping its surface with a scalpel blade.

k. Blood samples collected in lavender-topped blood tubes containing an anticoagulant to evaluate patients for infections and anemia; used for CBC, heartworm checks.

l. Tapping the bladder with a hypodermic needle through the abdominal wall to collect an uncontaminated sample of urine.

Clinical/Laboratory Activities

1. Discuss with the veterinarian or veterinary technician the specimens commonly collected at the clinic and your responsibility in assisting with specimen collection.
2. Observe the veterinarian's or veterinary technician's technique for collecting and testing specimens. Ask to see microscopic examinations of specimens identifying parasites and diseases.
3. Use the free catch method to collect a urine specimen and label and store the container appropriately.
4. Collect a fecal specimen and label and store the container appropriately.
5. Identify areas at the clinic where samples are to be stored prior to processing.

Lesson 4:
Laboratory Procedures

Objectives:

A. Understand the purposes of common laboratory procedures.

B. Identify the materials used in common laboratory procedures.

C. Prepare for and clean up after common laboratory procedures.

D. Be aware of critical steps involved in common laboratory procedures.

Key Terms:

- Fecal flotation
- Meniscus
- Urinalysis (UA)
- Urine chemistries
- Urine specific gravity
- Urine sediment exam
- Pipette
- Heat-fixing
- Packed cell volume or hematocrit
- Hematocrit tubes
- Anticoagulant
- Capillary action
- Differential count
- Requisition forms
- Hemolysis

Some veterinarians prefer to do all laboratory procedures themselves; others delegate these procedures to a trusted veterinary technician. The animal care assistant should understand how and why procedures are performed. He or she may be recruited to help the technician prepare for and clean up after simple laboratory procedures. Preparation and proper technique are critical to obtaining valid test results. It is important to remember that only the veterinarian is qualified to interpret test results.

The animal care assistant must be careful when handling specimens and equipment. He or she should use proper sanitation measures during procedures and dispose of used materials properly. Attention to detail and responsibility in the laboratory will make the animal care assistant invaluable to the clinic.

Types of Laboratory Procedures

Fecal flotation is the mixing of fecal material with a solution that is heavier than potential worm eggs. After mixing the feces and solution, the lighter worm eggs are given 10-15 minutes to float to the surface of the solution where they are picked up on a coverslip and placed on a microscope slide for examination.

Required materials:

Clean test tube (or special containers with
snap-in filters)
Wooden applicator stick
Fecal flotation solution (e.g. Ovassay)
Clean glass slide and coverslip
Microscope

Preparation steps:

Stool samples should be less than 24 hours old and refrigerated if not run immediately. Feces that is dry and hard or has been frozen or overheated may give misleading results and should not be used.

Adult parasites may be seen in or around the sample during preparation. Report any visible parasites to the veterinary technician or veterinarian as the eggs may not appear under the microscope.

A sample size of 1/2-1 teaspoon of feces should be mixed thoroughly with the fecal flotation solution. Incomplete mixing may prevent the parasite eggs from floating to the surface.

The test tube or container should be slightly overfilled with flotation solution so that the interface between liquid and air, or **meniscus**, forms a fluid dome at the top of the tube. Filling should be slow to avoid creating air bubbles on the surface of the meniscus.

The coverslip can be placed on the top of the filled test tube at the beginning or the end of the procedure. When the coverslip is lifted off the container and placed on the slide, it must be lifted straight up rather than slid off sideways to avoid scraping off any parasite eggs sticking to its bottom surface.

The prepared slide should be presented immediately to the veterinary technician or veterinarian before the thin layer crystallizes and becomes unreadable.

A filter test for heartworms is a test that screens for heartworms in a dog. It is designed to concentrate any juvenile heartworms (microfilariae) in the bloodstream onto a filter and stain them for microscopic visualization. Antigen tests are more exact tests run at the veterinarian's discretion.

Required materials:

1 ml. whole blood
9 ml. lysing solution (Difil solution)
12 ml. syringe
Heartworm filter housing and filter (a thin quarter-sized tissue-like item)
Difil stain
Clean glass slide and coverslip
Microscope

Preparation Steps:

The 1 ml. of whole blood is mixed in a syringe with 9 ml. of a lysing solution that destroys the blood cells and leaves the juvenile heartworms.

The mixture is passed through the loaded filter housing, then followed by 2-3 flushes with a 12 ml. syringe full of either water or air. Water minimizes the generation of unwanted air bubbles.

The filter housing is then opened and the filter lifted by its edge and placed right-side up on the slide.

A single drop of stain is placed on the filter, followed by a coverslip. The specimen should be allowed to sit for a minute or two to allow the stain to fully penetrate any heartworm microfilaria before reading the slide.

While the slide is waiting to be read, the filter housing should be rinsed with water, patted dry, and reloaded with a new filter. Filter housings should never be closed without a new filter in them.

The syringe that was used to mix the sample may be rinsed with water and reused only if the sample was negative. Reusing syringes after a positive test may contaminate the next specimen resulting in a false positive test result.

Present the slide to the veterinary technician or veterinarian as soon as possible to avoid drying of the sample.

Dispose of the slide and coverslip according to the clinic's policy.

Urinalysis or **UA** is a laboratory test performed at the clinic to screen for urinary tract infections. The UA consists of three parts, **urine chemistries**, **urine specific gravity**, and **urine sediment exam**. Urine chemistries measure the pH, blood, protein, bilirubin, sugar, etc., using Multistix or similar test strips. Urine specific gravity measures the relative amount of solids (cells, blood, crystals, and bacteria) in the urine compared with liquid using a refractometer. The urine sediment exam is the examination of the solids that settle to the bottom of the test tube after the urine is centrifuged and the fluid portion is poured off.

Required materials:

Urine chemistry sticks (e.g., Multistix, raised colored pads on thin strips)
Cone-shaped test tube
Refractometer
Centrifuge
Sedistain (stain for urine sediment)
Clean slide and two coverslips
Microscope

Preparation steps:

Urine specimens should be read within 12 hours of collection. If storage is necessary during that time, urine should be refrigerated in a clean, covered container.

Before setting up a urinalysis, the sample must be at room temperature.

Gently rock the container to be sure any solids are suspended in the liquid component.

Pour 10 ml. of urine into a clean urine specimen tube.

The chemistry stick, or dipstick, is dipped into the urine. The colors of the pads are compared to the values on the side of the bottle, and the results are recorded. It is important that one stick at a time be removed from the bottle and the lid replaced immediately to avoid contamination of the remaining dipsticks or deterioration of the sample due to air and moisture.

A drop of urine is placed on the refractometer to measure and record urine specific gravity. The refractometer is rinsed with distilled water, dried with lint-free, non-abrasive paper (e.g., Kim-wipes), and replaced in its case.

The urine specimen is then placed in the centrifuge, balanced, and spun to allow the sediment to settle to the bottom. The fluid is then poured off and the sediment picked up in a **pipette**, a plastic tube with a narrow tip at one end and a bulb at the other, much like an eyedropper. Pipettes are usually disposable. One drop of sediment is placed on a slide and covered with a coverslip. Another drop is mixed with a drop of Sedistain and covered for the veterinarian to evaluate under the microscope.

The veterinarian usually runs this test entirely but may train the animal care assistant to read the urine chemistry sticks, to measure the specific gravity, and to prepare the urine sediment slides.

Urine and other body fluids may also be cultured for bacterial growth. These samples are usually handled by the veterinarian or veterinary technician because sterile technique is critical to the results. Cultures are generally sent to an outside laboratory.

Skin scrapings are specimens scraped from the skin with a scalpel blade to diagnose sarcoptic or demodectic mange and some other types of skin diseases.

Required materials:

Mineral oil
Scalpel blade
Clean glass slide
Microscope

The veterinarian or veterinary technician usually goes straight from collecting the specimen to reading the slide.

Similarly, ear mite checks involve mixing material collected from the external ear canal with mineral oil and then scanning the slide under the microscope to observe any parasites. Differential white blood counts, fine needle aspicates, ear swabs, and wound excretions may be stained and evaluated microscopically for cellular characteristics and infectious organisms.

Required materials:

Clean glass slide
General laboratory stain set
  (e.g., Diff-Quick)
Cigarette lighter or matches
Immersion oil
Microscope

Preparation steps:

> The veterinarian or veterinary technician will make a thin smear of material on a microscope slide and will specify whether air-drying or **heat-fixing**, briefly heating the slide from underneath with a flame, is appropriate for the sample.
>
> The veterinarian or veterinary technician may instruct the animal care assistant on the staining technique, which involves 10 dips of the slide in the fixer and then dips in two additional stains with blotting of slide edges in between solutions. The slide is rinsed in distilled water and leaned upright to allow excess moisture to drain before it is read. It is important not to touch the specimen on the top surface of the slide with your fingers or other materials.
>
> The patient name and date may be marked on the end of the slide with a permanent marker to differentiate it from others in the laboratory.
>
> Fixed and stained slides will keep for several days or months and still be readable. They must be kept free of dust and hair accumulation and are often stored in special slide boxes.
>
> The veterinarian interprets the characteristics of the cells on the slide under a high power microscope, which requires oil immersion. A drop of immersion oil is placed on the slide before focusing on the specimen with a 100X lens.
>
> After the slide has been evaluated, it is important that the immersion oil be cleaned off the lens immediately with lens paper to keep oil and debris from accumulating on the lens.
>
> Discard slides as instructed.

Packed cell volume or **hematocrit** measures the percentage of blood that is made of blood cells versus the amount of chemicals and water. Technically called microhematocrit, it is usually abbreviated hematocrit, PCV, or "crit." PCVs are run on whole blood. Common anticoagulants include EDTA, which is in the lavender-topped blood tubes, and heparin. The hematocrit value aids in evaluating anemia and dehydration.

Required materials:

- **Hematocrit tubes** (tiny hollow glass tubes that are open at both ends)
- Hematocrit tube clay (clay in a small flat tray)
- Microhematocrit centrifuge and measurement scale or ruler

Preparation steps:

Gently rock the specimen tube to be sure the blood cells are evenly suspended in the fluid portion of the blood.

The hematocrit tube is filled to the black line by **capillary action**. Capillary action is the tendency of a liquid to flow in the direction of the path of least resistance or according to the pull of gravity. The end of the hematocrit tube or capillary tube is immersed in the blood allowing the blood to flow into the tube. When the tube is full, capillarity may be stopped by placing your finger carefully over one end, much like using a straw to play with a drink.

The open end of the full capillary tube is placed at an angle and pressed carefully into the clay to create a seal at that end. Capillary tubes break very easily and can cut fingers if handled roughly.

The tube is placed into the microhematocrit centrifuge with the clay plug facing outward from the center, balanced with a second tube, covered tightly, and spun to allow the blood cells to settle into the outer or lower part of the tube atop the clay plug. Failure to balance or to cover the tube tightly can cause the tube to break and the specimen to be lost. Failure to place the clay plug outward will allow the specimen to be spun out of the open end.

After the hematocrit is spun, the percentage of the length of the tube that is red blood is measured and recorded. Measurement is done with a special scale or by dividing the length of the blood column by the length of the entire specimen in millimeters and multiplying by 100.

The veterinarian or veterinary technician will probably run this test, but it is not technically difficult. The animal care assistant may be asked to prepare the specimen to be read. This test is often performed at the clinic but may be sent to an outside laboratory as part of a complete blood count.

A complete blood count, or CBC, is a test on whole blood that consists of counts of red and white blood cells and certain substances in the blood. This test helps detect the presence of infection and may be run at the clinic or sent to an outside laboratory for detailed analysis. A CBC consists of the following measurements and counts:

- White blood cells or WBC (total number of white blood cells)
- **Differential count** (counts of each type of white blood cell)
- Red blood cell or RBC (total number of red blood cells)
- Hematocrit (often used to estimate the RBC count at the clinic)
- Hemoglobin (the oxygen-carrying chemical in RBCs)*
- Red blood cell measurements (size and contents)*

*Are only measured in sophisticated laboratories.

CBCs are run by the veterinarian or veterinary technician or are sent to an outside laboratory. The animal care assistant will only be asked to mark tubes or fill out **requisition forms**, forms that are completed when a specimen is sent to an outside laboratory that includes information about the patient and the tests requested by the veterinarian.

Harvesting serum samples means collecting the liquid fraction of blood by separating the serum from the clot for certain blood chemistry measurements. This helps the veterinarian evaluate major body systems, such as the liver or kidney.

Required materials:

Red-topped tube (clot tube)
Centrifuge
Pipette or small-barreled syringe

Preparation steps:

Whole blood is gently injected into a clot tube and set upright for a few minutes to allow the blood to clot in the tube. Rough handling can cause **hemolysis**, damage to the red blood cells. Hemolysis causes misleading results. To clot means to coagulate or to become thick and jelly-like. Refrigerated blood clots faster than blood at room temperature.

Mark the tube immediately with the patient's name and the date.

Once the blood is clotted and does not flow in the tube, the specimen is centrifuged to allow the clot to shrink to the bottom of the tube and the liquid or serum to separate just above the clot. Serum is everything in the blood besides the blood cells and clotting factors.

Once the serum has separated from the clot, it is drawn off carefully using a pipette. This should be done quickly and carefully. Letting serum sit on a clot or accidentally drawing some of the clot into the pipette with the serum can give misleading results.

The harvested serum should be clear and free of blood cells. It is then injected into another clot tube and marked again with the patient's name and the date. The sample should be refrigerated until it is submitted to the laboratory. Some clinics perform serum samples and others send them to outside laboratories by mail or courier. The fresher the sample, the more accurate the results will be.

The veterinarian or veterinary technician usually harvest the serum sample because handling is critical. The animal care assistant may be recruited to mark the tubes, observe for clotting, centrifuge the sample, and complete the requisition forms.

Tissue specimens for evaluation by an outside laboratory must be preserved quickly and properly in a preservative called formaldehyde to ensure accurate results. Formaldehyde is a potentially toxic liquid and should not be handled by the animal care assistant except under close supervision by the veterinarian or veterinary technician.

Test Your Knowledge: Complete the following activity sheet to test your knowledge and understanding of the materials you have studied in this lesson.

Lesson 4: Laboratory Procedures

Activity Sheet

1. Why are the following laboratory procedures performed?

   Fecal flotation:

   Filter test for heartworms:

   Urinalysis:

   Skin scrapings:

   Ear mite check:

   Hematocrit:

   Complete blood count:

   Harvesting serum:

2. List and describe the three parts of urinalysis.

   a. ____

   ____

   b. ____

   ____

   c. ____

   ____

3. How should the coverslip be removed from the top of the test tube during a fecal flotation?

   ____

   ____

4. May a syringe used for a filter test for heartworms be reused? Explain.

____

____

5. How should urine samples be stored? How long may urine samples be stored?

   a. ____

   b. ____

6. What two items of information should be on a clot tube label?

   a. ____

   b. ____

7. What are requisition forms?

____

____

Clinical/Laboratory Activities

1. Discuss with the veterinarian or veterinary technician your responsibilities for assisting with laboratory procedures.

2. Learn test procedures from the veterinarian or veterinary technician before assisting with any laboratory procedures.

3. Label clot tubes or test samples appropriately. Complete requisition forms at the direction of the veterinarian or veterinary technician.

Lesson 5:
Animal Disposal

Objectives:

A. Identify types of animal disposal processes.

B. Bag and label animal according to instructions.

C. Store bagged animals appropriately.

Key Terms:

- Euthanized
- Cremation

It is an unpleasant reality in veterinary practice that animals die or are **euthanized**, humanely put to death. Some of these animals have been patients for years, and the veterinarian and veterinary team members are attached to them and their owners. Deciding to end a pet's life can be one of the most difficult decisions a client will ever make. The death of a pet is a stressful experience for the client, veterinarian, and veterinary staff. Being prepared for the death is the best way to reduce everyone's stress. Everyone in the practice should show concern, respect, and skill when dealing with the death of an animal.

Disposal Methods

If possible, disposal arrangements should be made with the client in advance. This will not be the responsibility of the animal care assistant though the assistant may be responsible for carrying out instructions. Many clients are concerned about what to do with their pet's body. Depending upon local laws, clients may choose to bury the pet on their property. If local law prohibits animal burial on private property, burial at a pet cemetery may be an option. If available, some owners opt for **cremation**, which is reducing a dead body to ashes. Sometimes, the owner may ask the veterinarian to dispose of the animal. The clinic may have an incinerator on site or may make arrangements with another crematory. Rendering plants in some areas will pick up animal bodies or parts.

Preparing Animal for Viewing After Death

Whether the animal died naturally or was euthanized, many clients need assurance that the pet is really dead. They may wish to view the body and say their goodbyes. The body should be presentable before allowing client viewing.

Procedure for Preparing an Animal for Viewing after Death

1. Put on gloves.

2. Clean any blood or other organic matter off the body. A heavily soiled body may require bathing and drying the hair coat.

3. Remove any catheters or bandages.

4. Place the tongue in the mouth and close the eyes.

5. Place a drop of tissue glue in each eye to keep the eyes closed.

6. Place the body on a sheet, blanket, or rug in a natural sleeping position. A cover is appreciated by the client.

7. Remove gloves.

8. Wash hands.

Bagging, Labeling, and Storing Animal Body

Procedure for Bagging and Labeling an Animal:

1. Put on gloves.
2. Place the animal in a body or cadaver bag in a natural sleeping position.
3. Label the bag with the date, the veterinarian's name, the names of the animal and the client, and the final disposition instructions.
4. Freeze or refrigerate body until the owner is ready to pick up the animal. Because the natural decay process begins immediately after death, the body will need to be refrigerated or frozen to prevent a mess or odor.
5. If preparing the body for home burial, remove the body from the bag and place the animal in a cardboard casket or wrap it in an old sheet, blanket, or rug before returning it to the owner. Do so quietly and respectfully.
6. Remove gloves.
7. Wash hands.

The manner in which the veterinarian and staff deal with the death of a patient will determine if the client continues to use the clinic. Every member of the veterinary team should treat the client and patient with compassion and respect. Many practices routinely send sympathy cards to clients after the death of their pets.

Test Your Knowledge: Complete the following activity sheet to test your knowledge and understanding of the materials you have studied in this lesson.

After you have completed the activity sheets, you may take the written evaluation for this unit. A score of at least 80 percent indicates you may proceed to the next unit. Check with your clinical supervising staff member for skill testing.

Lesson 5: Animal Disposal

Activity Sheet

1. List two types of animal disposal.

   a. ______________________________

   b. ______________________________

2. What does euthanize mean?

   ____

3. List the steps of procedure for bagging and labeling an animal.

   a. ______________________________

   b. ______________________________

   c. ______________________________

   d. ______________________________

   e. ______________________________

   f. ______________________________

   g. ______________________________

4. Name five items of information that should be labeled on every bagged animal.

   a. ______________________________

   b. ______________________________

   c. ______________________________

   d. ______________________________

   e. ______________________________

Clinical/Laboratory Activities

1. Discuss the clinic's procedures for disposing of animals with the veterinarian or veterinary technician. Find out what your responsibilities will be for handling dead animals.
2. Research animal burial and disposal options available in your community.

Unit Checklist

Student Name ______________________ Overall Unit Rating ________

Activity Sheet: Routine Clinic Procedures Rating ________

Comments: ______________________

Activity Sheet: Caring for Equipment in the Veterinary Clinic Rating ________

Comments: ______________________

Activity Sheet: Collecting Specimens Rating ________

Comments: ______________________

Activity Sheet: Laboratory Procedures Rating ________

Comments: ______________________

Activity Sheet: Animal Disposal Rating ________

Comments: ______________________

Skill Sheet: Prepare Surgical Instruments for Sterilization Rating ________

Skill Sheet: Collect a Fecal Sample Rating ________

Skill Sheet: Free Catch a Urine Sample Rating ________

Skill Sheet: Prepare an Animal for Viewing After Death Rating ________

Skill Sheet: Bag and Label a Dead Animal Body Rating ________

Written Unit Evaluation Score ________

Additional Comments: ______________________

Teacher Signature ______________________ Date ________

Student Signature ______________________ Date ________

Written Unit Evaluation

Student Name ______________________________ Date __________________

Circle the letter that corresponds to the best answer.

1. What is the primary purpose of veterinary medicine?
    a. To prevent, diagnose, and treat animal diseases and injuries.
    b. To protect the public from diseases carried by animals.
    c. To offer medical services to animal owners.
    d. To protect animals from improper care and handling.
2. How many years of college must the veterinarian attend?
    a. Two to four years
    b. Six to eight years
    c. Twelve years
    d. Ten years
3. Which is not an example of a specialty veterinary practice?
    a. A practice that only treats an animal's eyes.
    b. A practice that only treats wildlife.
    c. A practice that only treats food animals.
    d. A practice that only treats birds.
4. Which of the following is not a purpose of a code of ethics?
    a. To serve as laws that regulate the practice of veterinary medicine.
    b. To communicate the ideals of the profession.
    c. To serve as a general guide for standards of professional and acceptable conduct.
    d. To provide disciplinary procedures for those who fall below the standards.
5. What agencies regulate the disposal of medical wastes?
    a. MO Department of Health and MO Department of Natural Resources
    b. U.S. Department of Agriculture and Environmental Protection Agency
    c. Environmental Protection Agency and Animal and Plant Health Inspection Service
    d. MO Department of Health and Board of Veterinary Medical Examiners

6. Which of the following animals are not covered by the Animal Welfare Act?

   a. Dogs and cats
   b. Circus and zoo animals
   c. Food animals
   d. Rodents and rabbits

7. What agency provides information regarding transportation, care, and rehabilitation of wild animals?

   a. U.S. Department of Agriculture
   b. Department of Conservation
   c. Department of Health
   d. Animal and Plant Health Inspection Service

Match the veterinary team members in Column A to the their duties in Column B.

Column A

____ 8. Veterinarian

____ 9. Veterinary technician

____ 10. Animal care assistant

____ 11. Receptionist

____ 12. Office manager

Column B

a. Bathe, feed, restrain, and exercise animals, clean clinic and compartments, and clerical duties.

b. Manage the business affairs of the veterinary practice.

c. Prevent, diagnose, and treat animal diseases and injuries.

d. Assist the veterinarian with procedures and supervise other veterinary team members.

e. Answer telephone, schedule appointments, and greet clients and animals.

Match the type of conduct in Column B with the action described in Column A.

Column A

____ 13. Promising miraculous results or cures.

____ 14. Speaking with honesty and fairness.

____ 15. Discussing patients and clients outside the workplace.

____ 16. Not complying with the legal limitations of the profession.

____ 17. Considering the patient's welfare first.

____ 18. Causing injury to a patient or client because of negligence.

Column B

a. Ethical

b. Unethical

c. Illegal

Match the state and federal agencies in Column A to their regulatory responsibilities in Column B.

Column A

____ 19. Board of Veterinary Medical Examiners

____ 20. OSHA

____ 21. USDA

____ 22. DEA

____ 23. AALAS

____ 24. AAALAC

Column B

a. Accredits research programs that use laboratory animals.

b. Certifies technicians working in laboratory facilities.

c. Regulates access of controlled substances through legal channels of distribution.

d. Sets guidelines for interstate movement and health standards of livestock and poultry.

e. Grants state licenses to practice veterinary medicine to veterinarians and veterinary technicians.

f. Assures safe and healthy working conditions for every employee in the United States.

Written Unit Evaluation

Student Name ______________________________ Date ________________

Circle the letter that corresponds to the best answer.

1. What is nonverbal communication?

   a. Using words to transmit information.
   b. Using body language, gestures, voice quality, and facial expressions when communicating.
   c. Written communication.
   d. Sign language.

2. When a client walks into the veterinary clinic, an example of a proper greeting may be:

   a. Hi there, what's up with Fido today?
   b. Hello, Mrs. Perkins, how can we help you today?
   c. Have a seat, I'll get to you when I get off the phone.
   d. Please fill out the paperwork, and the doctor will be with you when she has time.

3. A client has come to check on her pet after its surgery. What should you say when she asks you how her pet is doing?

   a. "The surgery went very well and Fluffy will be going home soon."
   b. "I'm not allowed to discuss this with you."
   c. "Please wait here one moment Mrs. Smith while I get the doctor to discuss Fluffy's surgery with you."
   d. "No need to worry, Fluffy is just fine."

4. It is ______________ for clients to treat their pets as members of the family or as their children.

   a. Strange
   b. Normal
   c. Unusual
   d. Irrational

5. What should the veterinary staff do when a pet owner decides to withhold a procedure or treatment from a pet?

   a. Report the client to the humane society.
   b. Perform the procedure or treatment anyway.
   c. Respect the client's wishes.
   d. Try to change the client's mind.

6. Which of the following is not an appropriate way to act towards a grieving client?
    a. Being sensitive to the person's feelings.
    b. Observing the client to determine how much to say or not to say.
    c. Feeling empathetic towards the person's situation.
    d. Mentioning an orphan animal in the kennel that needs a new home.

7. The most professional method of placing a caller on "hold" is to say:
    a. "Can you hold for two or three minutes?" Then wait for a response.
    b. "Hold please," and do not wait for a response.
    c. "Hold for a few minutes," and do not wait for a response.
    d. "I am putting you on hold now," and put the caller on hold immediately.

8. A client without an appointment wants to see the doctor, you should:
    a. Check with the doctor or qualified staff member to see if the doctor can see the client.
    b. Explain that he or she must have an appointment, and then make an appointment for the person.
    c. Take the client to see the doctor immediately.
    d. Tell the client that he or she will have to take a seat and wait until the doctor can see him or her.

9. A caller yells at you because an appointment time is not available, you should:
    a. Say you're sorry, and hang up the phone.
    b. Listen to the client, and speak calmly and professionally about another day for an appointment.
    c. Yell at the client for being angry at you.
    d. Tell the client to make an appointment with a different veterinarian.

10. What is an emergency?
    a. A potentially life-threatening situation that develops suddenly and unexpectedly and demands immediate action.
    b. When the client is very upset about his or her pet's situation.
    c. A situation that may or may not be life-threatening but should be considered as such until an examination can be made.
    d. A concern or task ranked over other tasks or concerns in order of importance.

11. How should you relay an urgent message to the veterinarian?
    a. Use proper medical terminology to convey the message professionally.
    b. Convey the client's complaint in the exact words the client used to describe the situation.
    c. Tell the veterinarian to take the call.
    d. Shout loudly to make sure you have his or her attention.

Lesson 2: Telephone Communication

Skill Sheet

TAKE A TELEPHONE MESSAGE

Student Name ______________________________ Date ________________

EQUIPMENT:

1. Telephone
2. Pen
3. Paper
4. Instructor/supervisor

CHECK IF THE STUDENT DID THE FOLLOWING	YES	NO
1. The name of the person with whom the caller wanted to speak.		
2. The current date.		
3. The time of day the call was received.		
4. The name of the caller and pet's name correctly spelled.		
5. Whether the caller is an existing client or a referral from an existing client.		
6. The reason for the call (client's concern, business meeting, personal call, etc.)		
7. Any message the caller wants to leave and any sense of urgency expressed. Try to determine whether the client wishes his or her sick pet to be seen as soon as possible.		
8. Indication of whether the caller expects a return call or will call back later.		
9. For calls that need to be returned, include the number and best time to reach the caller.		

The student has satisfactorily completed the procedure "TAKE A TELEPHONE MESSAGE" according to the steps outlined.

______________________________ ________________

Instructor's/Approved Clinical Supervisor's Signature (Verifying Satisfactory Completion) Date

Written Unit Evaluation

Student Name ______________________________ Date ____________________

Circle the letter that corresponds to the best answer.

1. Which of these names will be last when filed alphabetically?

   a. Alice B. Jones
   b. Albert C. James
   c. Al Q. Jones
   d. Alberta James

2. Which of the following is not an alphabetical filing guideline?

   a. Consider the prefix in a surname as part of the name, not as a separate unit.
   b. Consider all hyphenated personal names as one indexing unit and ignore the hyphen.
   c. Treat each part of the name as a separate unit.
   d. Alphabetize client names in this order: first name, surname (last name), and middle name or middle initial.

3. Which of these files comes first when filed by the terminal digit?

   a. 126290
   b. 098290
   c. 053290
   d. 118290

4. If an animal in the clinic has a damaged neck band that cannot be read, you should:

   a. Replace the neck band by obtaining information from active files of animals currently at the clinic.
   b. Replace identification immediately by completing a new neck band and addressing any confusion with the veterinarian or veterinary technician.
   c. Replace the neck band to the best of your ability using the previous band.
   d. Replace identification immediately by completing a new neck band using information on the cage card.

5. Who may write information in the medical record?

   a. The members of the veterinary staff who provide animal care.
   b. Anyone on the veterinary staff who makes an important observation.
   c. The animal care assistant, veterinarian, or veterinary technician.
   d. Only the veterinarian or veterinary technician.

6. When an animal is being discharged, when should it be brought to its owner:

   a. When the owner asks for his or her pet.
   b. While going over the instructions on a discharge summary form.
   c. Before going over the instructions on a discharge summary form.
   d. After going over the instructions on a discharge summary form.

7. Which of the following animal identification systems is used mostly for small animals:

   a. Microchip identification system
   b. Branding
   c. Tattooing
   d. Ear notching

8. When maintaining inventory, which of the following is not the responsibility of the animal care assistant?

   a. Recording low inventory on a bulletin board
   b. Cleaning and dusting shelves
   c. Ordering supplies
   d. Removing damaged and expired supplies

Written Unit Evaluation

Student Name ________________________________ Date ____________________

Circle the letter that corresponds to the best answer.

1. What is a laboratory animal?

   a. Small animals used for research purposes.
   b. Any animal used for research purposes.
   c. Laboratory mice and rats.
   d. Rodents and rabbits used for research purposes.

2. Which of the following rodents purrs, whistles, and chirps?

   a. Hamster
   b. Mouse
   c. Guinea pig
   d. Gerbil

3. The AKC recognizes how many groups of purebred dogs?

   a. Two
   b. Six
   c. Four
   d. Seven

4. What is neutering?

   a. Neutering is the procedure for sterilizing male dogs.
   b. Neutering is the term for removing reproductive organs of male or female dogs or cats.
   c. Neutering is the procedure for sterilizing female cats and dogs.
   d. Neutering is the term for removing reproductive organs from male animals only.

5. Which kind of cat is the most commonly seen at veterinary clinics?

   a. Siamese
   b. Persian
   c. Manx
   d. DLH and DSH

6. Which of the following ratites is the largest?

   a. Male ostrich
   b. Female ostrich
   c. Emu
   d. Rhea

7. How many inches is a horse that is 14 hands tall?

   a. 72 inches
   b. 36 inches
   c. 56 inches
   d. 60 inches

8. What is the world's most popular breed of horse?

   a. Appaloosa
   b. American Quarter Horse
   c. Belgian.
   d. Thoroughbred

9. Which of the following statements about snakes is not true?

   a. Snakes become easily stressed.
   b. Snakes are invertebrates.
   c. Snakes are cold-blooded.
   d. Snakes are carnivores.

10. Which animal is not considered to be exotic?

    a. Parrot
    b. Shih Tzu
    c. Burmese Python
    d. Brahman

11. Which of the following livestock has the largest population in the United States?

    a. Swine
    b. Sheep
    c. Goats
    d. Cattle

Match the definitions in Column B to the terms in Column A.

Column A	Column B
____ 12. Caprine	a. Cat
____ 13. Bovine	b. Cattle
____ 14. Canine	c. Dog
____ 15. Ovine	d. Goat
____ 16. Feline	e. Horse
____ 17. Porcine	f. Llama
____ 18. Equine	g. Sheep
____ 19. Camelid	h. Swine

Written Unit Evaluation

Student Name____________________________________ Date ____________________

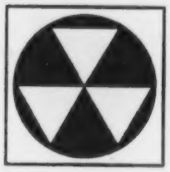
Circle the letter that corresponds to the best answer.

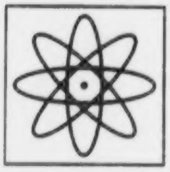
1. What are two types of hazardous materials in veterinary practice?
   a. Biologicals and hazardous chemicals
   b. Infectious medical wastes and hazardous chemicals
   c. Hazardous chemicals and sharps
   d. Cultures and sharps

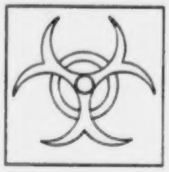
2. What are three categories of infectious medical waste?
   a. Sharps, cultures, and animal wastes
   b. Needles, biologicals, and animal wastes
   c. Chemicals, biologicals, and animal wastes
   d. Sharps, animal wastes, and chemicals

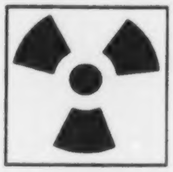
3. Which of the following is not a method of decontaminating infectious wastes before disposal?
   a. Chemical treatment
   b. Disinfecting
   c. Autoclaving
   d. Incineration

4. Which of the following symbols is a universal biohazard symbol?

a. 

b. 

c. 

d. 

5. What is the Hazard Communication Standard (HCS)?
   a. The person responsible for recording and maintaining a list of all hazardous chemicals in the workplace.
   b. The government agency responsible for monitoring the health and safety of all employees.
   c. The set of guidelines designed to protect all employees in America from potential injury or illness caused by contact with chemicals in the workplace.
   d. The safety information supplied with every product that contains hazardous materials or chemicals.

6. Which of the following is not an OSHA requirement for veterinary practices?

   a. Employees must be trained regarding chemical hazards in the workplace.
   b. Controlled substances must be locked in a solid storage cabinet.
   c. Employees working with radiographs must wear dosimeters.
   d. Anesthetic gases must be scavenged from the building.

7. Which method of disease transmission transfers infective agents from one host to another by carriers such as the tick or mosquito?

   a. Airborne transmission
   b. Indirect contact transmission
   c. Vector transmission
   d. Direct contact transmission

8. How often should the examination table be cleaned and disinfected?

   a. After every patient
   b. Twice daily
   c. As needed
   d. Every hour

9. What is a zoonotic disease?

   a. A disease caused by one-celled microorganisms that contain no chlorophyll.
   b. A disease than can be spread from one animal to another.
   c. A disease caused by parasites.
   d. A disease that can be transmitted from vertebrate animals to humans.

10. What is an infectious disease?

    a. A disease that can be transmitted from vertebrate animals to humans.
    b. A disease than can be spread from one animal to another.
    c. A disease transmitted by a vector.
    d. A disease that causes unique symptoms such as coughing, fever, and pus-like discharge.

11. Which animal cannot have rabies?

    a. Iguana
    b. Dog
    c. Horse
    d. Ferret

12. What is isolation?

    a. Separating an animal that poses a danger to other animals.
    b. Separating an animal that bites from other animals.
    c. Separating an animal that has an infectious disease in a facility away from other animals.
    d. Separating an animal in a facility away from other animals because it may have been exposed to an infectious disease.

13. How long should an animal remain in quarantine?

    a. Until the incubation period is over.
    b. Until the animal shows symptoms of disease.
    c. For at least two weeks.
    d. Until the owner comes to pick up their pet.

14. What class of infectious diseases may require isolation?

    a. Class 1
    b. Class 2
    c. Class 3
    d. Class 4

15. What class of infectious diseases always requires isolation?

    a. Class 1
    b. Class 2
    c. Class 3
    d. Class 4

16. How should you safely approach an animal?

    a. Back the animal into a corner so that it cannot escape.
    b. Looking the animal directly in the eye.
    c. Slowly and calmly while speaking softly and soothingly.
    d. From behind so that it does not see you coming.

Match the term in Column B to its definition in Column A.

Column A

____ 17. Process of destroying all forms of life

____ 18. Process of removing dirt and organic matter

____ 19. Process of destroying microorganisms in nonliving objects

____ 20. Process of applying a preparation to the surface of living tissue to prevent sepsis

Column B

a. Cleaning

b. Disinfecting

c. Sterilizing

d. Antisepsis

Match the classification in Column B to its description in Column A.

Column A

____ 21. Diseases with a moderate zoonotic potential that require close contact with infected body fluids or a vector to transmit them.

____ 22. Diseases that are highly contagious and may be spread by direct contact or by airborne transmission.

____ 23. Diseases with a low infectious potential that have a very slight chance of spreading between patients or from animal to human.

____ 24. Diseases that require close or direct contact with infected animals or their body fluids.

Column B

a. Class 1 Infectious Disease

b. Class 2 Infectious Disease

c. Class 3 Infectious Disease

d. Class 4 Infectious Disease

Match the term in Column B to its description in Column A.

Column A

____ 25. Defensive aggression to an unpleasant expectation of danger.

____ 26. Natural aggression of animals that instinctively prey on other animals.

____ 27. Aggression of a mother animal trying to protect its young.

____ 28. Aggression between two animals of the same sex.

____ 29. Aggression of an animal protecting its "home" area.

____ 30. Aggression of an animal attempting to establish control.

____ 31. Aggression induced sexually by hormones.

____ 32. Aggressive response caused by the pain or stress of being ill or injured.

Column B

a. Dominance

b. Fear

c. Intersex

d. Irritability or pain

e. Maternal instinct

f. Predatory

g. Sexually induced

h. Territorial

Match the zoonotic disease in Column A to its characteristics in Column B.

Column A

____ 33. Salmonellosis

____ 34. Ringworm

____ 35. Toxoplasmosis

____ 36. Brucellosis

____ 37. Ancylostomiasis

____ 38. Cat Scratch Fever

____ 39. Tularemia

____ 40. Toxocariasis

____ 41. Leptospirosis

____ 42. Plague

____ 43. Chlamydiosis

Column B

a. Fungal disease transmitted by direct contact and fomites. Symptoms include circular lesions with reddened borders.

b. Bacteria carried by a broad range of animal hosts, including mammals, birds, and reptiles, that shed the organism in their feces. Infection is transmitted to humans and animals by food contaminated with feces and causes varying degrees of diarrhea.

c. Parasitic disease caused by protozoal parasites that inhabit the intestinal tract of infected cats. Can be transmitted congenitally from a pregnant woman to the fetus.

d. Bacterial disease also called "rabbit fever." It can be contracted from fluid, tissues, and feces of infected animals, improperly cooked meat, or inhalation of infectious dust.

e. Parasitic disease, also called visceral larva migrans, caused by an infection of roundworm larvae. It is an infection generally seen in children who eat dirt. Puppies and kittens are common carriers.

f. Parasitic disease, also called "creeping eruption," caused by infective larvae of hookworms.

g. Bacterial disease transmitted by direct contact with infected rodents and fleas.

h. Bacterial disease that federal and state agencies are working to eradicate. It infects the reproductive tract and mammary glands of animals.

i. Primary mode of infection is by exposure to water, soil, and foods contaminated with urine. Most common symptoms are fever and anorexia, but it may also affect the gastrointestinal tract and kidneys.

j. Bacterial disease, also called parrot fever, transmitted through feces of infected birds.

k. Bacterial disease caused by bacterium found in the mouths of cats. It is transmitted by the scratch or bite from a cat.

Written Unit Evaluation

Student Name_______________________ Date ____________

Circle the letter that corresponds to the best answer.

1. Which of the following is a type of small animal restraint?
    a. Muzzle
    b. Squeeze chute
    c. Tail restraint
    d. Snare

2. What large animal may require a nose twitch?
    a. Horse
    b. Cattle
    c. Swine
    d. Sheep

3. What is the first thing you should do before removing an animal from its cage, run, or stall?
    a. Check the restraint device to make sure it is working properly.
    b. Make observations about the animal's condition and check for parasites.
    c. Make sure there are no routes of escape for the animal.
    d. Remove the cage card to be placed at the animal's new location.

4. What kind of observations should the animal care assistant make about animals in their care?
    a. They should systematically check all body systems of animals in their care.
    b. They should routinely measure vital signs of animals in their care.
    c. They do not make any observations about animals.
    d. They should report any abnormal observations that they see while providing the animals with routine care such as feeding, cleaning waste, exercising, or bathing.

5. You notice that an animal has external parasites. What should you do?
    a. Spray the animal with an insecticide.
    b. Note the physical characteristics and location of the parasite, and inform veterinary personnel.
    c. Bathe and dip animal before taking it to the exam room.
    d. Tell the client to bring the animal back at another time.

6. Which of the following are endoparasites?

   a. Fleas
   b. Mites
   c. Roundworms
   d. Ticks

7. Lice are more common on what animals?

   a. Dogs and cats
   b. Cattle, swine, and poultry
   c. Goats and sheep
   d. Horses

8. What is a therapeutic diet?

   a. A diet designed for an animal to maintain its body weight and condition in a certain stage of life.
   b. A diet formulated specifically for treatment or prevention of specific problems related to the animal's diet.
   c. A diet that equally divides daily requirements into three meals per day.
   d. A diet that promotes weight loss.

9. What does NPO on a cage card mean?

   a. New patient
   b. Never pet occupant
   c. Nothing by mouth
   d. No sleeping

10. Which of the following would be used to weigh a very small animal?

    a. Platform scale
    b. Weight measurement tape
    c. Infant scale
    d. Portable scale

11. When bathing an animal, when should you use a shampoo containing insecticides?

    a. When you notice the presence of fleas.
    b. When the shampoo has been approved by the veterinarian or veterinary technician.
    c. Each time the animal is bathed.
    d. When the animal has been scratching.

Match the restraining device in Column A to its use in Column B.

Column A

____ 12. Halter

____ 13. Snare

____ 14. Squeeze chute

____ 15. Nose twitch

____ 16. Nose tong

____ 17. Lunge line

____ 18. Tail restraint

____ 19. Muzzle

Column B

a. Raising the tail over the back with firm pressure to distract horses or cattle while being treated.

b. A cable or rope noose placed around a pig's snout.

c. A distracting device placed in the nostrils of cattle and used to apply firm pressure on each side of the septum.

d. A distracting device made of a loop of chain, rope, or metal placed around a horse's top lip and tightened.

e. A device used to capture a horse or to lead horses, cattle, or goats.

f. A holding device that immobilizes cattle while being treated.

g. A device that covers the mouths of dogs and cats to prevent them from biting or eating.

h. A long, usually flat line, used to safely exercise horses.

Match the possible in Column A to its description in Column B.

Column A	Column B
______ 20. Ticks	a. Small, sometimes microscopic, spider-like arachnids, that can be on the surface or burrowing. Cause an animal's coat to look "mangy" and itchy skin.
______ 21. Mites	b. Tiny (6-20 mm long), hairlike, white to reddish colored parasites.
______ 22. Fleas	c. Long (3.5 cm or more), white, spaghetti-looking worms.
______ 23. Lice	d. Tiny, black or brown insects that may be seen crawling deep in the animal's coat. Their feces are black, coffee-ground looking material that may be seen in the animal's coat.
______ 24. Roundworms	e. White parasites, 2-3 inches in length, slender at one end and thick at the other.
______ 25. Hookworms	f. Eight-legged, spider-like organisms that can be the size of a pinpoint to the size of a small grape.
______ 26. Whipworms	g. Tiny, flat-bodied, wingless insects sometimes visible that leave tiny nits attached to the hair shafts.
______ 27. Tapeworms	h. Segments of encased eggs that can be seen in fresh feces or around the anus of an infected animal. The segments look like grains of rice when dry.

Match the parasite in Column A to its description in Column B.

Column A

_____ 28. Ticks
_____ 29. Ear mites
_____ 30. Fleas
_____ 31. Lice
_____ 32. Strongyles
_____ 33. Hookworms
_____ 34. Heartworms
_____ 35. Whipworms

Column B

a. Parasitic roundworms of horses, cattle, sheep, and swine.

b. Parasites of dogs that inhabit the large intestine.

c. An external parasite that is more common on cattle, swine, and poultry than on pet animals.

d. Internal parasites whose natural host is the dog and other canines. Ferrets and cats are infected less commonly.

e. Intestinal parasites of dogs and cats. The infective larva may penetrate the skin of both animals and humans.

f. A type of mange mite commonly seen in dogs, cats, rabbits, and ferrets.

g. They are not host-specific but do prefer certain animals and are seen on any warm-blooded animal that frequents wooded areas.

h. External parasites that prefer their intended host but will bite any warm-blooded animal, including humans.

Lesson 4: Cleaning Animal Compartments

Skill Sheet #1

CLEAN DOG/CAT CAGE

Student Name ________________________ Date ______________

EQUIPMENT:

1. Gloves
2. Dog/cat
3. Cage Card
4. Bedding
5. Litter pan
6. Water and food bowls
7. Disinfectant solution
8. Wash cloth or sponge

CHECK IF THE STUDENT DID THE FOLLOWING	YES	NO
1. Wash hands and wear gloves as indicated on cleaning products.		
2. Remove the animal from cage or run and place in a clean cage or holding area. Make sure cage card is also moved with the animal.		
3. Remove all organic matter, bedding, litter pans, water and food bowls from the cage or run. If bedding is soiled with feces or other solids, discard the bedding in an appropriate container. Reusable bedding should be washed. Discard uneaten food, water, and cat litter.		
4. Apply approved disinfectant solution to entire cage or run surface including the front of the cage. Thoroughly scrub all surfaces to remove any debris.		
5. Wipe all cage surfaces to remove any remaining debris. Remove any debris, hair, dirt, etc., from floor grates in runs. Removal of all hair is critical.		
6. Sponge or spray the surface again with the disinfectant. Leave the surface moist for the amount of time recommended by the directions for the disinfectant.		
7. After the disinfectant has dried, place clean bedding and/or a cat litter pan filled with clean litter into the cage, or run before replacing the animal.		

8. Replace the animal in the cage or run and secure door tightly.		
9. Wash hands after handling each animal. As mentioned in Unit V, Lesson 3, many zoonotic diseases are transmitted to humans by contact with animal feces. Hand washing is very important after cleaning animal compartments to prevent disease transmission.		

The student has satisfactorily completed the procedure "CLEAN DOG/CAT CAGE" according to the steps outlined.

Instructor's/Approved Clinical Supervisor's Signature
(Verifying Satisfactory Completion)

Date

Lesson 4: Cleaning Animal Compartments

Skill Sheet #2

CLEAN AND DISINFECT BIRD CAGE

Student Name ______________________________ Date ____________________

EQUIPMENT:

1. Gloves
2. Bird cage
3. Food/water containers
4. Cage liner
5. Litter pan
6. Water and food bowls
7. Disinfectant solution

CHECK IF THE STUDENT DID THE FOLLOWING	YES	NO
1. Wash hands and wear gloves as indicated on cleaning products.		
2. Remove food and water containers without stressing the bird.		
3. Discard uneaten food and water.		
4. Clean and rinse containers.		
5. Dry containers and replace with appropriate food and water.		
6. Remove bottom tray and discard the cage liner.		
7. If soiled, clean and disinfect the tray.		
8. Dry the tray and replace with a clean cage liner.		
9. Wash hands.		

The student has satisfactorily completed the procedure "CLEAN AND DISINFECT BIRD CAGE" according to the steps outlined.

______________________________ ____________________

Instructor's/Approved Clinical Supervisor's Signature (Verifying Satisfactory Completion) Date

Lesson 4: Cleaning Animal Compartments

Skill Sheet #3

CLEAN AND DISINFECT RODENT/RABBIT CAGE

Student Name ______________________________ Date ____________________

EQUIPMENT:

1. Rodent/rabbit
2. Cage
3. Cage card
4. Gloves
5. Bedding/shavings
6. Feeders and waterers
7. Disinfectant solution
8. Sponge/wash cloth
9. Fresh water/food

CHECK IF THE STUDENT DID THE FOLLOWING	YES	NO
1. Wash hands and wear gloves as indicated on cleaning products.		
2. Carefully remove the animal from cage and place in a clean cage. Move cage identification to the new compartment with the animal.		
3. Remove all organic matter such as bedding, shavings, feeders, and waterers from the cage.		
4. Apply an approved disinfectant solution to the entire cage and thoroughly scrub all surfaces to remove any debris. The urine from rabbits and some rodents contains crystals that form a hard scale which can be difficult to remove.		
5. Wipe all cage surfaces to remove any remaining debris.		
6. Thoroughly rinse, disinfectant, and allow the cage to air dry.		
7. Place clean bedding in the cage before replacing the animal.		
8. Place fresh water and food in clean containers.		
9. Put the animal in the cage and secure door or lid tightly.		
10. Wash hands.		

The student has satisfactorily completed the procedure "CLEAN AND DISINFECT RODENT/RABBIT CAGE" according to the steps outlined.

Instructor's/Approved Clinical Supervisor's Signature
(Verifying Satisfactory Completion)

Date

Lesson 4: Cleaning Animal Compartments

Skill Sheet #4

CLEAN AND DISINFECT EQUINE/FOOD ANIMAL STALL

Student Name ______________________________ Date ________________

EQUIPMENT:

1. Gloves
2. Equine or food animal staff
3. Bedding
4. Water/buckets
5. Feed

CHECK IF THE STUDENT DID THE FOLLOWING	YES	NO
1. Wash hands and wear gloves as indicated on cleaning products.		
2. Remove wet or stained bedding, fecal material, and soiled food. Place discarded bedding and food in the designated area. Place fresh bedding in the stall.		
3. Empty and rinse water buckets to remove any grain or hay particles. Refill water buckets.		
4. When the animal is discharged, remove all bedding, food, and water. The stall and buckets for water and feed must be cleaned and disinfected with an approved disinfectant.		
5. Wash hands.		

The student has satisfactorily completed the procedure "CLEAN AND DISINFECT EQUINE/FOOD ANIMAL STALL" according to the steps outlined.

______________________________ ________________

Instructor's/Approved Clinical Supervisor's Signature (Verifying Satisfactory Completion) Date

Lesson 4: Cleaning Animal Compartments

Skill Sheet #5

CLEAN FEED/WATER CONTAINERS

Student Name ______________________ Date ____________

EQUIPMENT:

1. Used feed and water containers
2. Disinfectant solution
3. Water

CHECK IF THE STUDENT DID THE FOLLOWING	YES	NO
1. Rinse containers with water to remove any remaining food or debris.		
2. Scrub containers inside and out to remove all debris.		
3. Rinse containers.		
4. Place containers in an approved disinfectant solution and soak for appropriate time.		
5. Rinse with water. Some situations may require rinsing with a diluted bleach solution before the final rinse.		
6. Allow to air dry.		
7. Wash hands.		

The student has satisfactorily completed the procedure "CLEAN FEED/WATER CONTAINERS" according to the steps outlined.

______________________________ ______________

Instructor's/Approved Clinical Supervisor's Signature Date
(Verifying Satisfactory Completion)

Lesson 6: Weighing

Skill Sheet #6

WEIGH ANIMAL USING A PLATFORM SCALE

Student Name ______________________ Date ______________

EQUIPMENT:

1. Dog/cat
2. Platform scale
3. Pen
4. Record

CHECK IF THE STUDENT DID THE FOLLOWING	YES	NO
1. Turn on scale.		
2. Wait for it to calibrate.		
3. Switch to either pounds or kilograms.		
4. Place the animal on the scale.		
5. Read and record weight. Always write kilograms (kg.) or pounds (lbs.) after the weight.		
6. Clean and disinfect the platform surface after use if the animal soils it.		

The student has satisfactorily completed the procedure "WEIGH ANIMAL A USING PLATFORM SCALE" according to the steps outlined.

______________________ ______________

Instructor's/Approved Clinical Supervisor's Signature (Verifying Satisfactory Completion) Date

Lesson 6: Weighing

Skill Sheet #7

WEIGH ANIMAL ON A BATHROOM/BALANCE SCALE

Student Name ______________________________ Date ________________

EQUIPMENT:

1. Small dog or cat
2. Bathroom or balance scale
3. Pen
4. Record

CHECK IF THE STUDENT DID THE FOLLOWING	YES	NO
1. Pick up the animal and hold it securely.		
2. Step onto the scale and have someone read the weight.		
3. Place the animal back in its cage and weigh yourself.		
4. Subtract your weight from the total weight. The difference is the animal's weight.		
5. Record weight in the record.		

The student has satisfactorily completed the procedure "WEIGH ANIMAL ON A BATHROOM/BALANCE SCALE" according to the steps outlined.

______________________________________ ____________________

Instructor's/Approved Clinical Supervisor's Signature (Verifying Satisfactory Completion) Date

Lesson 6: Weighing

Skill Sheet #8

WEIGH ANIMAL USING A WEIGHT MEASUREMENT TAPE

Student Name ______________________________ Date ________________

EQUIPMENT:

1. Large animal
2. Weight measurement tape
3. Pen
4. Record

CHECK IF THE STUDENT DID THE FOLLOWING	YES	NO
1. The animal needs to be standing square with weight distributed equally on all four legs and head upright.		
2. Wrap the tape around the animal's heart girth, just behind the front legs.		
3. Pull snug enough to lay the hair flat, but not tight.		
4. Read and record the weight. Although the weight is an estimate, it is usually accurate.		

The student has satisfactorily completed the procedure "WEIGH ANIMAL USING A WEIGHT MEASUREMENT TAPE" according to the steps outlined.

______________________________ ________________

Instructor's/Approved Clinical Supervisor's Signature (Verifying Satisfactory Completion) Date

Lesson 7: Bathing and Dipping Dogs and Cats

Skill Sheet #9

BATHE ANIMAL

Student Name ______________________ Date ______________

EQUIPMENT:

1. Tub
2. Ophthalmic ointment
3. Shampoo
4. Towel
5. Rubber apron, boots, gloves
6. Cotton balls
7. Water

CHECK IF THE STUDENT DID THE FOLLOWING	YES	NO
Prepare Animal for Bathing 1. Be sure tub is clean and all necessary items are within reach before beginning the bath. Bathing items include ophthalmic ointment (eye ointment), shampoo, premixed dip, and a towel.		
2. Wear protective rubber apron, boots, and gloves if possible to avoid soaking your clothing.		
3. Apply ophthalmic ointment before bathing to protect the animal's eyes from chemical injury.		
4. Place a small piece of cotton in each ear to prevent water from getting into the animal's external ear canal. DO NOT forget to remove the cotton when bathing is complete.		
5. Note the location of any large mats of hair that will interfere with bathing and report these to the proper personnel before bathing. Mats of hair should be clipped before wetting the animal.		
6. Before applying water to the animal, check the temperature of the water with your hands to ensure that it will not burn. Animals prefer a cooler bath than people. The water may feel cooler through gloves than it actually is.		
Bathe Animal 1. Wet animal using lukewarm water in a light spray. Check the temperature on the inside of your wrist periodically during the bath to avoid extreme temperature fluctuations.		

2. Apply shampoo as directed on the bottle. Some shampoos must be shaken before application. A cleansing bath is required before applying medicated and insecticidal shampoos.		
3. Bathe animals infested with fleas starting at the head and working back. Shampoos containing **insecticides** should only be used if approved by the veterinarian or veterinary technician. These products can have a toxic effect or may react with other medications if used improperly.		
4. Lather shampoo into the coat. Insecticidal shampoos should not be applied to the scrotum of male dogs.		
5. All shampoos, regardless of type, must be rinsed with generous amounts of clean water.		
6. Following bathing, rinses may be applied to the hair coat. Some rinses are formulated to remain on the hair and others are to be rinsed out.		
7. Remove the cotton from the external ear canals.		
8. Initially, dry the animal with bath towels. If cage dryers or blow dryers are to be used for final drying, do not leave the animal unattended. These dryers can cause an animal to develop **hyperthermia**, a serious medical condition in which the animal can die from overheating. Drying racks or bath towels may be placed in the kennel to dry the underside of the animal.		
9. Remove hair or other debris from the bathtub and drain.		
10. Clean and sanitize the tub using the proper disinfectant.		
11. Wash hands.		

The student has satisfactorily completed the procedure "BATHE ANIMAL" according to the steps outlined.

Instructor's/Approved Clinical Supervisor's Signature
(Verifying Satisfactory Completion)

Date

Lesson 7: Bathing and Dipping Dogs and Cats

Skill Sheet #10

DIPPING ANIMAL

Student Name ______________________________ Date ____________________

EQUIPMENT:

1. Tub
2. Ophthalmic ointment
3. Shampoo
4. Premixed dip
5. Towel
6. Rubber apron, boots, gloves
7. Cotton balls
8. Water

CHECK IF THE STUDENT DID THE FOLLOWING	YES	NO
1. Prepare animal for dipping.		
2. Bathe animal.		
Dip animal. 3. Make sure the dipping area has adequate ventilation and wear proper protective clothing. This includes an apron, rubber or latex gloves, and goggles. Many of these dips may be absorbed through the skin and have toxic effects on humans and animals.		
4. Dips should be mixed fresh each time in an appropriate container. One container should not be used for more than one brand of dip.		
5. Only apply dips to a clean, towel-dried animal. Do not remove cotton placed in the animal's ears before bathing until finished dipping.		
6. Apply dip as directed on the container. Use care when handling dips.		
7. Rinse dip if necessary. Most dips remain on the animal's coat and are not rinsed off.		
8. Remove the cotton from the external ear canals.		

9. Dry the animal according to the directions on the dip container. Most dips are less effective if rinsed off the animal or if the animal is toweled or blown dry.		
10. Remove hair or other debris from the bathtub and drain.		
11. Clean and sanitize the tub using the proper disinfectant.		
12. Wash hands.		
13. Discard leftover dip properly.		

The student has satisfactorily completed the procedure "DIPPING ANIMAL" according to the steps outlined.

Instructor's/Approved Clinical Supervisor's Signature
(Verifying Satisfactory Completion)

Date

Written Unit Evaluation

Student Name ____ Date ______________________

Circle the letter that best corresponds to the best answer.

1. Physical examinations, laboratory tests, and radiographs are examples of ______________ procedures.

   a. Therapeutic
   b. Diagnostic
   c. Medical
   d. Preventive

2. Vaccinations are examples of ______________ procedures.

   a. Therapeutic
   b. Diagnostic
   c. Medical
   d. Preventive

3. Therapeutic procedures may be either:

   a. Surgical or medical.
   b. Preventive or diagnostic.
   c. Medical or diagnostic.
   d. Surgical or diagnostic.

4. Which of the following is a large animal surgical procedure?

   a. Neutering
   b. Ear cropping
   c. Dehorning
   d. Dewclaw removal

5. Which of the following is a small animal medical procedure?

   a. Floating teeth
   b. Ear flush
   c. Routine hoof care
   d. Fecal egg counts

6. What is the name of the procedure in which a needle is placed into the bladder and urine aspirated?

   a. Cystocentesis
   b. Free catch
   c. Urethral catheterization
   d. Voiding

7. What information do you put on specimen container labels?

   a. Your name, veterinarian's name, and clinic's name
   b. Type of specimen and when it was collected
   c. Animal's name, the veterinarian's name, and clinic's name
   d. Patient's name and number, client's name, and date and/or time collected

8. What specimens must be refrigerated if stored before testing?

   a. Blood, serum, urine, and fecal samples
   b. Skin scrapings, urine, and fecal samples
   c. Blood, skin scrapings, and culture/sensitivity samples
   d. Biopsies, culture/sensitivity, and skin scraping samples

9. What are methods of animal disposal?

   a. Cremation, euthanization, and burial
   b. Cremation or incineration and burial
   c. Include body with garbage, cremation, and burial
   d. Euthanization, cremation or incineration, burial, and throw out with garbage

10. When bagging, labeling, and storing an animal's body, what information should be on the bag label?

   a. Animal's name and owner's name
   b. Your name, veterinarian's name, owner's name, and animal's name
   c. The date, the veterinarian's name, owner's name, animal's name, and final instructions for disposal
   d. Veterinarian's name, clinic's name, owner's name, and final instructions for disposal

Write a "D" in the blank next to the instrument listed if it is a "disposable instrument" and an "R" if it is a "reusable" instrument.

______ 11. Refractometer

______ 12. Hematocrit tubes

______ 13. Scalpel blade

______ 14. Scalpel handle

______ 15. Blood tubes

______ 16. Microscope slide

______ 17. Culturettes®

______ 18. Hemostat forceps

Match the instrument or machine in Column A to its purpose in Column B.

Column A

______ 19. Vaporizer

______ 20. Mouth gags

______ 21. Microscope

______ 22. Film cassettes

______ 23. Endotracheal tube

______ 24. Centrifuge

______ 25. Refractometer

______ 26. Clippers

Column B

a. A laboratory instrument designed to spin at a variety of speeds to separate solids from liquids such as serum from a blood clot.

b. Used to remove hair from the skin during surgical preparation and in wound treatment.

c. The most important functional unit of the anesthetic gas machine.

d. Hinged cases into which radiographic film is placed to protect the film while the radiographs are being taken.

e. Metal tools equipped with a spring designed to hold the patient's mouth open while the veterinarian or veterinary technician works in the animal's mouth.

f. A small, hand-held instrument used in the laboratory to measure urine specific gravity and total protein levels in blood serum.

g. Semi-rigid plastic tubes that deliver anesthetic gases directly into the lungs of the patient.

h. A laboratory instrument equipped with different lenses used to magnify specimens from 40 to 1,000 times their actual size.

Match the terms in Column A to their definitions in Column B.

Column A

______ 27. Biopsy

______ 28. Fecal specimens

______ 29. Cytology

______ 30. Culture

______ 31. Serum sample

______ 32. Sensitivity

______ 33. Whole blood sample

______ 34. Skin scraping

Column B

a. The removal of a large tissue sample for microscopic examination and diagnosis. Samples are cut into sections and immersed in formaldehyde.

b. A cultivation of microorganisms or cells in a substance in which microorganisms or cells can grow or move.

c. Swabs of material or fine needle aspirates spread on a microscope slide and stained to evaluate the types of cells in the material.

d. Blood samples collected in red-topped or "clot" tubes.

e. A laboratory method for testing the effectiveness of antibiotics on an organism.

f. A teaspoon of feces

g. A representative sample of feces, body fluids such as blood, urine or pus, skin scrapings, fine needle aspirates of lumps and bumps, or whole sections of tissue used to diagnose disease or parasitism.

h. Specimens collected from the skin by scraping its surface with a scalpel blade.

i. Blood samples collected in lavender-topped blood tubes containing an anticoagulant to evaluate patients for infections and anemia.

Lesson 2: Caring for Equipment in the Veterinary Clinic

Skill Sheet #1

PREPARE SURGICAL INSTRUMENTS FOR STERILIZATION

Student Name ______________________________ Date ____________________

EQUIPMENT:

1. Latex gloves
2. Surgical instruments
3. Instrument milk
4. Drape
5. Disposable plastic bag/pouch
6. Pen
7. Tray

CHECK IF THE STUDENT DID THE FOLLOWING	YES	NO
1. Put on latex gloves.		
2. Properly prepare instruments by presoaking, precleaning, and drying and lubricating as needed.		
3. Place instruments or tray in the center of the wrap.		
4. Fold up bottom corner and turn back two inches of end.		
5. Fold left corners over the edge of the tray or instruments.		
6. Fold right corners over to other edge of the tray or instruments.		
7. Fold top corner down to the middle and secure with tape.		
8. Label wrapping with: a. names of instruments or type of tray setup,		
b. date of wrapping, and		
c. initials or name.		
9. Place in proper sterilization area or sterilizer.		
10. Remove gloves.		

The student has satisfactorily completed the procedure "PREPARE SURGICAL INSTRUMENTS FOR STERILIZATION" according to the steps outlined.

Instructor's/Approved Clinical Supervisor's Signature
(Verifying Satisfactory Completion)

Date

Lesson 3: Collecting Specimens

Skill Sheet #2

COLLECT A FECAL SAMPLE

Student Name ______________________________ Date ________________

EQUIPMENT:

1. Gloves
2. Animal feces in litter pan or on ground
3. Wooden tongue depressor
4. Specimen container
5. Pen

CHECK IF THE STUDENT DID THE FOLLOWING	YES	NO
1. Put on gloves.		
2. After the animal defecates, collect a teaspoon-sized sample of feces with a gloved hand or wooden tongue depressor and place in a container or cup.		
3. Remove gloves.		
4. Wash hands.		
5. Label the container with the animal's name and patient number as directed by the veterinary technician or veterinarian.		
6. Present sample to the appropriate staff member, veterinary technician, or veterinarian, or store properly.		

The student has satisfactorily completed the procedure "COLLECT A FECAL SAMPLE" according to the steps outlined.

____
Instructor's/Approved Clinical Supervisor's Signature
(Verifying Satisfactory Completion)

____
Date

Lesson 3: Collecting Specimens

Skill Sheet #3

FREE CATCH A URINE SAMPLE

Student Name ______________________________ Date ________________

EQUIPMENT:

1. Specimen container/cup
2. Gloves
3. Animal
4. Pen

CHECK IF THE STUDENT DID THE FOLLOWING	YES	NO
1. Slowly place a small container or cup under the animal's urine stream to collect urine.		
2. Label the container or cup as directed by the veterinary technician or veterinarian.		
3. Place the cup in appropriate area of the clinic, or refrigerate.		
4. Wash hands.		

The student has satisfactorily completed the procedure "FREE CATCH A URINE SAMPLE" according to the steps outlined.

______________________________ ________________

Instructor's/Approved Clinical Supervisor's Signature (Verifying Satisfactory Completion) Date

Lesson 5: Animal Disposal

Skill Sheet #4

PREPARE AN ANIMAL FOR VIEWING AFTER DEATH

Student Name ______________________________ Date ____________________

EQUIPMENT:

1. Gloves
2. Dead animal
3. Tissue glue
4. Sheet, blanket, or rug

CHECK IF THE STUDENT DID THE FOLLOWING	YES	NO
1. Put on gloves.		
2. Clean any blood or other organic matter off the body. A heavily soiled body may require bathing and drying the hair coat.		
3. Remove any catheters or bandages.		
4. Place the tongue in the mouth and close the eyes.		
5. Place a drop of tissue glue in each eye to keep the eyes closed.		
6. Place the body on a sheet, blanket, or rug in a natural sleeping position. A cover is appreciated by the client.		
7. Remove gloves.		
8. Wash hands.		

The student has satisfactorily completed the procedure "PREPARE AN ANIMAL FOR VIEWING AFTER DEATH" according to the steps outlined.

______________________________ ____________________

Instructor's/Approved Clinical Supervisor's Signature (Verifying Satisfactory Completion) Date

Lesson 5: Animal Disposal

Skill Sheet #5

BAG AND LABEL A DEAD ANIMAL BODY

Student Name ______________________________ Date ________________

EQUIPMENT:

1. Gloves
2. Animal body
3. Body or cadaver bag
4. Pen

CHECK IF THE STUDENT DID THE FOLLOWING	YES	NO
1. Put on gloves.		
2. Place the animal in a body or cadaver bag in a natural sleeping position.		
3. Label the bag with the date, the veterinarian's name, the names of the animal and the client, and the final disposition instructions.		
4. **Freeze or refrigerate body until the owner is ready to pick up the animal. Because the natural decay process begins immediately after death, the body will need to be refrigerated or frozen to prevent a mess or odor.**		
5. If preparing the body for home burial, remove the body from the bag and place the animal in a cardboard casket or wrap it in an old sheet, blanket, or rug before returning it to the owner. Do so quietly and respectfully.		
6. Remove gloves.		
7. Wash hands.		

The student has satisfactorily completed the procedure "BAG AND LABEL A DEAD ANIMAL BODY" according to the steps outlined.

______________________________ ________________

Instructor's/Approved Clinical Supervisor's Signature Date
(Verifying Satisfactory Completion)

Animal Care Assistant Competency Record

Name and Address: ____

Directions: Evaluate the student by entering the appropriate number to indicate the degree of competency.

Rating Scale (0-6):

- 0 **No Exposure** - no experience/knowledge in this area; program/course did not provide instruction in this area
- 1 **Unsuccessful Attempt** - unable to meet knowledge or performance criteria and/or required significant assistance
- 2 **Partial Demonstration** - met some of the knowledge or performance criteria with or without minor assistance
- 3 **Knowledge Demonstrated** - met knowledge criteria without assistance at least once
- 4 **Performance Demonstrated** - met performance criteria without assistance at least once
- 5 **Repetitive Demonstration** - met performance and/or knowledge criteria without assistance on multiple occasions
- 6 **Mastered** - successfully applied knowledge or skills in this area to solve related problems independently

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0-6	Date	**A. Introduction to Veterinary Medicine**
		1. Identify the roles and responsibilities of veterinary team members.
		2. Maintain professional work habits.
		3. Apply ethical and legal principles to the veterinary field.
		4. Maintain confidentiality.
		5. Recognize local, state, and federal regulations that affect veterinary practice.
		Other: ________________
		________________

0-6	Date	**B. Communication Skills**
		1. Communicate effectively with animal owners (clients) and coworkers.
		2. Greet clients appropriately.
		3. Use correct terminology and grammar when communicating with clients and coworkers.
		4. Treat clients and coworkers with respect and courtesy.
		5. Answer telephone properly.
		6. Transfer calls.
		7. Place caller on hold.
		8. Take accurate telephone messages.
		Other: ________________
		________________

0-6	Date	**C. Basic Office Procedures**
		1. File alphabetically and numerically.
		2. Complete identification band and cage card.
		3. Maintain animal identification.
		4. Use observation skills to assist with daily progress notes.
		5. Assist with admitting animals into the clinic.
		6. Assist with discharging animals from the clinic.
		7. Clean, dust, restock, and straighten supplies.
		8. Report low inventory.
		Other: ________________
		________________

0-6	Date	**D. Animal Identification**
		1. Identify common breeds of animals treated.
		2. Utilize species terminology appropriately.
		Other: ________________
		________________

0-6	Date	**E. Clinic Safety**
		1. Identify types of hazardous materials.
		2. Prepare hazardous materials for disposal.
		3. Identify biohazard label.
		4. Identify OSHA requirements pertinent to the veterinary practice.
		5. Locate and read material safety data sheets (MSDS).
		6. Maintain a safe environment for animals and workers.

0-6	Date	**E. Clinic Safety (Continued)**
		7. Prevent disease transmission.
		8. Maintain personal hygiene.
		9. Follow clinic procedures for cleaning.
		10. Handle antiseptics and disinfectants safely.
		11. Clean and routinely check for cleanliness of exam room.
		12. Clean and routinely check for cleanliness of surgical and treatment areas.
		13. Clean, disinfect, and routinely check for cleanliness of floors and corridors.
		14. Clean and routinely check for cleanliness of outdoor exercise areas and the parking lot.
		15. Remove hair/debris from drain grate in bathtubs, and routinely check bathtubs for cleanliness.
		16. Identify common zoonotic diseases.
		17. Identify modes of transmission of zoonotic diseases.
		18. Identify steps in preventing zoonotic diseases.
		19. Identify diseases that require isolation or quarantine.
		20. Implement isolation procedures.
		21. Identify principles that influence animal behavior.
		22. Recognize common warning signs of aggression.
		23. Identify procedures for safely approaching animals.
		Other: ________________
		________________

0-6	Date	F. Animal Care
		1. Assist in restraining animals as directed.
		2. Securely support the animal's body weight when lifting.
		3. Identify potential routes of escape and take precautions.
		4. Examine restraint devices for security.
		5. Follow clinic procedures for walking and exercising animals.
		6. Properly lift animals.
		7. Walk and exercise animals.
		8. Recognize and report changes in conditions.
		9. Observe and report abnormal conditions.
		10. Recognize worms (internal parasites) in stool.
		11. Recognize the presence of external parasites.
		12. Report observed parasites.
		13. Clean and disinfect dog and cat compartments.
		14. Clean and disinfect bird cages.
		15. Clean and disinfect rodent and rabbit cages.
		16. Clean and disinfect equine and food animal stalls.
		17. Clean and disinfect feed and water containers.
		18. Measure and deliver food as directed.
		19. Monitor and replenish water supply.
		20. Record appetites.
		21. Recognize and follow NPO orders.
		22. Weigh animals on a platform scale.
		23. Weigh animals on a balance scale.
		24. Weigh animals on an infant scale.
		25. Weigh large animals using a weight measurement tape.
		26. Weigh animals on a portable scale.
		27. Record weight.

0-6	Date	F. Animal Care (Continued)
		28. Prepare animal for bathing and dipping.
		29. Bathe animal using prescribed shampoo or medication.
		30. Identify and implement appropriate drying techniques.
		31. Clean and disinfect tub.
		32. Remove hair/debris from bathtub drain.
		33. Follow safety precautions when using dips.
		34. Apply dips as directed.
		35. Recognize side effects of insecticide reaction.
		Other: ____________________
		____________________

0-6	Date	G. Clinic Procedures
		1. Maintain and clean equipment and instruments.
		2. Collect a fecal specimen.
		3. Collect a voided urine specimen.
		4. Label and store all types of specimen containers.
		5. Bag and label animal according to instructions.
		6. Store bagged animals appropriately.
		Other: ____________________
		____________________

Certificate of Achievement

This is to certify that

____

Achieved the Competencies
as Acknowledged for
Animal Care Assistant
And is Therefore Recognized

This __________ Day of __________, ______

____
Instructor

____
Administrator